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THE RAILWAY GAZETTE
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The Serious Position of Coal Stocks

THE September issue of the *Monthly Digest of Statistics* shows the serious stock position among large consumers of coal. At the end of August the railways had stocks of 485,000 tons, compared with 601,000 tons in July. Although the more recent figure was slightly better than the 410,000 tons held in August, 1945, it compares very unfavourably with the 1,151,000 tons held in August, 1944. After August last year the railways were able to build up stocks slightly during the winter months, but the prospect of doing that this year seems to be small. At the end of 1945 the stock held was only 621,000 tons—a very low figure compared with 898,000 tons at the end of 1944, and with well over a million tons at the end of the previous war years. Gas company stocks at 1,326,000 tons are a little better than the 1,183,000 tons of August last year, but far below the 2,000,000 to 3,000,000 tons formerly held. Stocks at electricity undertakings at 1,797,000 tons compare with 3,041,000 tons the year before, and water companies stocks at 84,000 tons compare with 125,000 tons in August last year. Among industrial consumers, iron and steel works have stocks of 442,000 tons, against 552,000 a year ago, and the engineering and other metal trades 443,000 tons, which compares with 718,000 tons. Government dumps now hold only 420,000 tons, against 966,000 tons a year ago, and 2,195,000 tons in August, 1944.

The Next International Railway Congress

It has now been decided that the next (14th) International Railway Congress will be held at Lucerne from June 23 to 28 next year. Reports will be published in English and French, but the discussions will be in English, French, and German; the various reports will be published in German for distribution only to those delegates asking for them. The town of Lucerne has been chosen because of the facilities offered by its Kongresshaus, and also because of its interest from the tourist viewpoint. The final programme will be sent to all participants, probably in November, but meanwhile the list of questions for discussion is available. The first concerns sleepers, and covers different types, maintenance methods, and financial comparison. Mr. J. C. L. Train (Chief Engineer, L.N.E.R.) will report for English-speaking countries. The second question deals with reduction in the weight of rolling stock, both passenger and goods, by different methods of construction, the use of special steels, and the use of alloys. Operating questions cover the organisation of train services from the viewpoints of frequency and train composition; and the relative merits of steam and electric traction. Mr. R. J. Harvey (Consulting Engineer of the New Zealand Government) is the English-speaking reporter, and M. Lorriot (French National Railways) the "other countries" reporter. The interest of railway companies in building houses for their staffs constitutes question IV, on which Mr. A. P. J. Ball (Estate Manager & Rating Agent, L.M.S.R.) is the reporter for English-speaking countries, and Mr. Antonucci (Italian State Railways) the reporter for other countries. The fifth section deals with light railways and Colonial railways.

Correlation of Road and Rail Rates

Some of the problems inherent in the correlation of rail and road rates were dealt with by Mr. A. E. Sewell, Railway Chairman of the Road-Rail Conference, in an address to the National Road Transport Federation Conference at Margate. He pointed out that it was known that the railways had millions of exceptional rates, but said that if it were physically possible to record all the individual quotations of every road haulier, they would exceed vastly the numbers of railway rates. It was clearly impracticable to attempt to correlate such a volume of rates, and it was equally clear that in any act of correlation there must be a feasible system to which both parties could adhere. The general merchandise classification of the future would still have regard to the value of the commodity, although not to the present detailed extent. It would have greater regard to wagon loading, and progress had been made in drafting such a classification and appropriate mileage scales of chargeable rates which would reflect to the trader the advantage derived from tendering traffic in two-ton, four-ton, six-ton, eight-ton, and ten-ton loads. It was hoped to simplify the

charging of "smalls," and as far as possible to take them away from classification, and charge simply on the basis of weight and distance.

High Voltage Cables

The technical aspects of cables and cable jointing for very high voltage electrical systems are the subject of a series of lectures and demonstrations being given by British Insulated Callender's Cables Limited at the Dorland Hall, London, to which many engineers and interested business folk have been invited. This firm, which was formed in 1945 by the amalgamation of British Insulated & Helsby Cables Limited and Callender's Cable & Construction Co. Ltd., has been responsible, through its immediate predecessors, for many pioneering achievements; it was the first in the world to manufacture, lay, and joint 132,000-volt 3-core cable for commercial operation, in 1944, and also to provide a 264,000-volt cable at Arnhem in Holland. It has developed techniques for the jointing and terminations of such cable systems, and these are the main subject of the lectures and demonstrations. The latter include full-size jointing of a straight-through 3-core impregnated pressure cable capable of transmitting 120,000 kilovolt-amperes. Many examples of equipment in connection with high voltage cables are being exhibited, some of them as working models and others as full-size originals. The principles used are applied to lower voltages, and a great many miles of 33,000-volt cables have been laid for railway and other supplies. An excellent film is being shown of the details of 132,000-volt 3-core cables, demonstrating the many special points arising in the handling of such high voltages and the features of the design which has been involved after long research and experience. In addition, the firm has carried out over 2,000 miles of railway track electrification at home and overseas, and has erected more than 1,650 miles of 132,000-volt grid lines for the Central Electricity Board.

Overseas Railway Traffic

The decrease of ps. 76,850 in Central Argentine traffic for the week ended September 28 is accounted for by two days' rain and a strike at refrigerator depots. For the fortnight under review a net gain of ps. 85,489 was shown. Buenos Ayres Western traffic has shown a combined decline of ps. 360,000 in the two weeks, the decrease of ps. 272,000 in the thirteenth week following one of ps. 88,000 in the preceding seven days. Buenos Ayres & Pacific and Buenos Ayres Great Southern receipts have improved in both weeks, the increases totalling ps. 557,000 and ps. 552,000 respectively. Nitrate Railways returns for the second fortnight of September showed a decrease of £1,673, which was an improvement on the setback of £3,985 recorded in the first two weeks of the month. After gains in the first three weeks of September, Leopoldina traffic fell off by £2,503 in the week ended September 28. Results are compared in the table below:—

	No. of week	Weekly traffic	Inc. or dec.	Aggregate traffic	Inc. or dec.
Buenos Ayres & Pacific*	13	2,300	+316	27,588	+1,984
Buenos Ayres Great Southern*	13	3,544	+225	42,600	+1,762
Buenos Ayres Western*	13	1,029	-272	15,381	+670
Central Argentine*	13	3,049	-77	40,413	+808
		£	£	£	£
Canadian Pacific	39	2,000,000	+35,250	53,661,750	-5,508,250

* Traffic returns in thousands of pesos

An increase of £5,500 in Canadian Pacific receipts for the 38th week was the first favourable comparison since the 11th week, and was followed by a greater improvement in the next seven days.

International Tourist Conference

Last week, delegates from some 40 nations met in London and discussed means whereby international tourist traffic could be made easier. It was recognised that the greatest barriers to tourist trade were passport and frontier regulations, and as a result of the discussions which have taken place, it is believed that ultimately there may be some easement in these requirements. During the conference a resolution was adopted unanimously urging all governments interested in the development of tourist traffic to encourage by international agreement the admission to, and exit from, each country of all official tourist propaganda material, and to make it free of taxes,

customs duties, and formal import licences. There was also unanimous support for a resolution recommending national tourist organisations to encourage approved associations dealing with such visits between students and young people of all nations. The British Home Office and the Board of Trade issued a statement during the conference, referring to the importance attached by the Government to the encouragement of tourists, and stating that, although it was as yet too early to give precise instructions as to the granting of visas, genuine tourists coming for a short visit would have no difficulty in obtaining leave to land in the United Kingdom.

Many Difficulties to be Overcome

Before international tourist traffic can be resumed on a wide scale, many domestic problems have to be solved in practically all the States which are parties to the Convention. In conversation with the delegates from a number of countries, it is clear that the disabilities from which Great Britain is suffering, and to which attention has been drawn in previous issues, are widespread. Lack of accommodation for visitors, problems connected with the supply of food, transport, and entertainment, are not peculiar to any one country at the present time. It may be, indeed, that one problem, the availability of shipping facilities, for example, between this country and the United States, may begin to be solved before it has been possible to provide adequate land accommodation either in this country or America. With the improvements in communications between various parts of Europe, it may be possible to commence a movement of tourists to those parts, which in turn would release some accommodation in this country which could be filled by overseas visitors. It seems clear, however, that some little time must elapse before international tourism on a large scale can get into its stride. A number of the delegates believed that no great movement could be expected before well into next year.

A Commonwealth Engineering Conference

The ties between engineering institutions in this country and elsewhere in the British Commonwealth have been strengthened by a joint conference held in London during September. Proposals for a conference of this kind had been under consideration for some time, and it was thought particularly desirable to hold one in order to consolidate the many contacts between engineers here and overseas which were made during the war. Invitations were despatched accordingly by the Institutions of Civil, Mechanical, and Electrical Engineers to the corresponding bodies in Australia, Canada, India, and South Africa. There was a cordial response, and the conference, held in London from September 14 to 28, is considered to have contributed materially towards the future co-ordination of the activities of all the institutions concerned, and to have facilitated an interchange of ideas from which lasting benefit will result. Arrangements have been made for holding similar conferences from time to time, and the suggestion has been accepted that the next one should be held in South Africa. In addition to the business meetings of the London conference, visits were arranged to the London Docks, the National Physical Laboratory, and the G.P.O. Research Establishment at Dollis Hill.

Return of the "Bournemouth Belle"

On Monday last, October 7, the Pullman car Southern Railway express "Bournemouth Belle," drawn by "Merchant Navy" class locomotive *British India Line*, resumed public service after an interval of seven years, and is now scheduled to leave Waterloo daily at 12.30 p.m., arriving at Southampton Central, the only stop, at 1.57 p.m., and Bournemouth Central at 2.35 p.m. In the up direction the train leaves Bournemouth Central at 7.25 p.m., and Southampton Central at 8 p.m., arriving at Waterloo at 9.25 p.m., the overall timing of 125 minutes for the 107 miles to Bournemouth representing an average speed of 51 m.p.h. The "Belle," which consists of 10 Pullman coaches, weighing 400 tons approximately, has accommodation for 66 first class and 236 third class passengers, for whom full dining car facilities are provided, and each car is equipped with a loud speaker installation. An official party travelled with the train on Monday, and at Bournemouth were the guests of the Corporation.

A New American Bogie Design

An interesting new design of bogie, intended particularly for use in high-speed freight vehicles, has recently been developed by the Standard Car Truck Company, of Chicago, and is illustrated and briefly described elsewhere in this issue. The use of roller bearings alone would not call for special mention, but what is of particular interest is the means adopted for controlling any lateral motion of the bolster, and for inducing the latter to return to its central position after rounding a curve. The makers ingeniously have designed special curved-bearing surfaces over which the roller bearings travel, and these surfaces are disposed at such an angle that their effect is to return the bolster to its mid-position. This, it is claimed, gives lateral control approaching that of swing links. No such links and pins are used; so the Barber device secures the equivalent effect with a great economy in number of working parts and a corresponding simplicity in maintenance. The arrangement would seem to be more reminiscent of the Cartazzi inclined slides than of the swing-link arrangement; but in any case it is successful in achieving a considerable reduction in weight; and wheel changing is particularly easy.

* * *

The American Locomotive-Building Trend

A remarkable commentary on the trend of present-day locomotive building in the United States is furnished by the details that have been published of orders placed on the locomotive-building firms in the first six months of 1946. Of class 1 railways, the Chesapeake & Ohio alone has ordered steam locomotives, 40 of the 2-8-4 type, and four locomotives for minor railways complete the requirements of the home railways for steam power; the remaining steam locomotive orders, 254 all told, are for export. For diesel-electric locomotives, on the other hand, orders totalling 541 units were placed, 88 for export and no fewer than 453 for railways in the United States. Many of the popular 1,500 h.p. units of the latest type, of which 223 are on order, are intended for multiple-unit service as twin, triple, and quadruple-units of 3,000, 4,500, and 6,000 h.p. respectively; such flexibility of operation, whereby units can be used in multiples under the control of a single engine-crew, is one of the major advantages of diesel power. Still more railways have announced their intention of turning over their operation from steam to diesel-electric exclusively, and now include some systems of considerable size, such as the combined Gulf, Mobile & Ohio and Alton Railways, the Missouri-Kansas-Texas (or "Katy" Lines), and the Chicago, Indianapolis & Louisville, generally known as the Monon Railroad.

* * *

Locomotive Smoke Abatement

A recent conference held in Minneapolis, U.S.A., showed that the problem of atmospheric pollution in large cities is being energetically attacked in America, and it is interesting to note that the method of going to work is to form a group of experts in the various spheres of industry in which, or through which, the smoke nuisance can become serious, and then to co-operate with county (and through the latter to State) authorities. Great blame has often been laid on railways in the past as producers of smoke, but statistics compiled as long ago as 1915 by the late Professor Goss show that their delinquencies in this respect have been much exaggerated. Yet since Professor Goss's survey, the amount of smoke over industrial areas that can be imputed definitely to railways has been halved. This is by no means all due to the greater use of electric or diesel traction; it is very largely due to prolonged and persistent efforts to improve locomotive design so that the production of smoke will be minimised. Nowadays overfire air jets are being fitted to large numbers of locomotives, but while certainly reducing the amount of smoke, they are, however, open to certain criticisms on the grounds of excessive steam consumption, "clinkering," and even danger to the crew if the firedoors are opened while the jets are in action. An ingenious automatic system recently developed by the Westinghouse Air Brake Company surmounts all these difficulties. It is described in a condensed report of the conference on page 413.

Railway Charges Inquiry

THE Charges Consultative Committee has begun the third week of its public inquiry into the best method of adjusting the main-line companies' charges so as to produce a net revenue during 1947 approximating to the £38,633,000 payable to them by the Government. Mr. F. A. Pope's evidence and cross-examination extended over seven days, during which he was closely questioned as to the bases on which the companies had compiled their estimates of receipts during 1947. On the tenth day of the hearing the Chairman of the committee (Sir Bruce Thomas, K.C.) questioned him as to the grounds on which the railway companies considered that the maintenance or creation of differentials between the amount of the percentage increases to be applied to the various kinds of traffic was undesirable.

The Chairman suggested that the balanced relationship between the seals of standard charges introduced in 1928 had been affected already by the very large increase in the number of exceptional rates which had been granted; by the introduction of monthly return tickets, which largely have superseded ordinary return tickets; and by the adoption of a lower scale for traders' season tickets. He also asked Mr. Pope, on the assumption that the companies' estimate of a deficit of £21 millions in 1947 was correct, what additional burden would be thrown on the other classes of traffic if the existing differentials were maintained for third class season tickets and workmen's fares, and an appropriate flat percentage applied to all other passenger and goods traffic.

The Chairman also asked the various interests to assist the committee by furnishing their views as to whether the phrase "aiming at an equitable distribution of charges," which appears in their remit, meant that any additional charge which might have to be borne by railway users as a whole should be distributed equitably among the various classes of traffic, as this might involve the maintenance of the existing differentials within very narrow limits. Further, the Chairman asked for assistance on the point that regard had to be paid to the Government's policy of full employment, as he desired an expression of views as to whether this involved an effort being made to see whether, by adjustments in charges, the committee might contribute to the success of the policy.

Witnesses then were called by various local authorities, who referred to a number of fare anomalies, and urged that, owing to the low income of many manual workers resident on suburban housing estates, no increases should be made in season ticket rates or workmen's fares. Other witnesses sought to show that the railway companies' estimates of revenue from freight-train traffic were pessimistic, and that no increase in charges was necessary. The proceedings of the inquiry are reported elsewhere in this issue.

* * *

A Nationalised Transport Plan

THE Railway Clerks' Association, which represents some 90,000 members, mainly of the clerical and other grades of the main-line railways and the L.P.T.B., has published a pamphlet* as a constructive contribution to the organisation of a nationalised transport system and its administration, so that the maximum efficiency and economy may be secured in the interests of national development and the welfare of the staff employed. The Association remarks at the outset that in its view, all forms of transport, road, rail, canal, coast-wise shipping, and inland airways ultimately should be integrated in one national system, but as the R.C.A. is concerned principally with rail and road, it deals only with the appropriate co-ordination of these two services.

It advocates the establishment of a National Transport Authority under the Minister of Transport, composed of a President, Vice-President, and 14 other members, of whom four should be the chairmen of four sectional boards responsible for road transport, railways, L.P.T.B., and ports, docks, and canals respectively. It suggests that, of the members of this National Authority, the President or Vice-President should be a representative of Labour; that four of the members be selected from employees' representatives, one to represent the trading and travelling public and one to represent in-

* "On the Way to Greater Service," published by the Railway Clerks' Association, 25, Euston Road, N.W.1

dustry. No member of this proposed Board is to be an M.P. or have any financial interest in any form of transport.

The function of this National Authority would be to co-ordinate all forms of inland transport and to direct and control those sections brought under public ownership. The National Authority, however, would not be concerned with day-to-day administration and operation, as this would be the function of the sectional boards, each composed of 12 members, linked with regional administration to ensure national and local co-ordination. The National Authority, however, would consider and authorise capital expenditure "subject to the approval of the Minister, who would be responsible for securing co-ordination with investment demands of other industries, having regard to the national employment situation"—a fine phrase, but one which, we suggest, overlooks the practical necessity for a continuance of the present speedy methods for authorising large numbers of small works involving some element of betterment, for which the proposed machinery would be much too slow and cumbersome.

It is contemplated that the National Transport Authority would co-ordinate the financial and material requirements of the various sections of transport, provide common services for finance, purchases, insurance, etc., and decide policy for the allocation of traffic. Allied to this Authority would be a National Consultative Council formed of representatives of the National Authority, trade unions, the T.U.C., employers' organisations, and users of transport, to review national transport conditions and make suggestions.

The Association proposes that sectional boards should be established for each section of the transport industry acquired by the State, of which the chairman or vice-chairman should be a representative of organised labour within the industry, and three others representative of the staff. In the case of the railways it is proposed that the Railway Board should consist of twelve members, of whom three should be recommended by the railway trade unions and the others have special knowledge of, or qualifications in, railway administration. The Railway Board would be responsible for the operation of an efficient railway service under the general direction of the National Authority. The Association has considered, but turns down, the idea of regional boards on the ground that they would overload the executive organisation, but, in the case of the railways, considers that for purposes of administration, public relations, and general commercial work, areas should be established corresponding with those of regional transport committees.

To ensure satisfactory railway operating, existing operating areas should be revised and co-ordinated by railway operating experts. In each area consultative committees are proposed, consisting of the chief executive officer and representatives of the trade unions, the trading and travelling public, and industry, for the purpose of reviewing local conditions and making suggestions for improving and maintaining railway efficiency. To bring about co-ordination between publicly-owned, municipally-owned, and privately-owned transport concerns, regional transport committees are proposed to replace the Traffic Area Commissions.

Turning to the L.P.T.B., the Association comments that Mr. Morrison has not made any reference to its future, and, after the consideration of various alternatives, the Association suggests that an L.P.T.B., not necessarily identical in scope with the existing system, might remain as a unit in the national system with the status of a sectional board. Ultimately, it proposes that all London's suburban passenger services, rail and road, should come under the jurisdiction of the new board.

As to the compensation to be paid to railway stockholders, the Association considered four bases on which this could be calculated. It rejected (a) nominal capital (or total capital expenditure, less depreciation) for the somewhat naive reason that it would be unjustifiably expensive; (b) the valuation of physical assets, because it would not be applicable in general to the acquisition of railway undertakings; (c) stock exchange valuation, because it would not be a sound basis, and, finally, decided that (d) reasonable net maintainable revenue is the least unsatisfactory of the existing bases. It suggests, however, that if, in estimating probable net revenue, allowance is made for the effect of the 1939 "square deal" proposals, allowance should also be made for the low pre-war wages paid.

Incidentally, it is interesting to note its view that the net

revenue of the railways depends largely on political as opposed to purely economic factors, a somewhat ominous hint of what nationalisation may involve. It suggests that the global sum representing the capital value of the acquired undertakings should be calculated by reference to an appropriate number of years' purchase, but that compensation should be paid in fixed-interest bearing Government stocks giving the holders no continued rights in the railway industry. It states that the National Transport Authority no doubt will be required to make an annual payment to the Exchequer in respect of capital charges, but suggests that, in the case of the railways, this should be based, not on the compensation paid, but on the value of the acquired undertakings to the co-ordinated public service of the future, a proposal which is open to criticism from several angles.

The Association admits being greatly perturbed at the absence from the Coal Nationalisation Bill of any specific protection indemnifying staff for loss arising from redundancy or worsenment arising as the result of the operations of the Bill, and urges the Government to ensure that adequate provision is made in this respect in any legislation establishing a nationalised transport system. It also urges that legislation should provide for the continuance of superannuation arrangements and of sick-pay conditions, *ex-gratia* retiring allowances, travelling facilities which have been established by custom and not by agreement. Finally, it suggests that the Bill should provide also for continuing existing trade union recognition agreements, negotiating machinery, and conditions of service, but suggests that the scope of sectional councils and local departmental committees should be enlarged, and that the staff should have an opportunity of expressing their views in regard to promotions.

The proposals have been put forward largely from a railway trade union point of view, and it is noticeable that they do not claim that the introduction of these elaborate arrangements would result in any more efficient service to the public than that normally given by the British railways.

* * * *

Improving London's Transport

WHATEVER differences of opinion exist regarding the desirability and principles of replanning great cities, there is general agreement on the need for improving transport services in step with increases and changes in distribution of population. All sections of the community have a common interest in getting to and from their daily work with the minimum inconvenience. The London traveller, in particular, may be excused for moments of despondency when he contemplates a lifetime of congested journeys, but he has the consolation of frequent evidence that improvements in his transport services not only have been planned in advance of developments likely further to overtax existing routes, but already are being pressed forward to completion.

News of progress with the schemes of London Transport and the main-line railways for projecting existing tube services to the Stratford and Loughton area, whose transport problems have been ventilated so often, and from North Acton to West Ruislip, where there is a rapidly expanding population to be served, was given in our July 12 issue. These schemes are only a part of the complete London Transport new works programme, surveyed in a recent publication* of *The Railway Gazette*. This involves an expenditure of £45,000,000 on a pre-war basis, and while it will make little difference to the transport map of London, it will have a profound effect on the facilities and services available to the public. The principal railway works consist of the electrification and modernisation of a considerable mileage of surface railway belonging to the main-line railways, and the construction of connecting tube lines to enable tube rolling stock traversing the Central Area to be projected into the outer suburbs over the newly electrified lines.

The first chapter of the publication outlines the history of the scheme as a whole and describes the individual projects for North-East, North-West, West, and North London, with diagrams of the track layouts throughout the sections involved. Constructional work is dealt with in detail, and there

* "Improving London's Transport." *The Railway Gazette*, 33, Tothill Street, Westminster, S.W.1. Price 5s.

is a 32-page section of illustrations showing work in progress and already completed, and types of electrical equipment and rolling stock. A folding map covers the whole area concerned, giving dates of opening and electrification of lines, and indicating the services provided on the present routes and new extensions. Signalling, rolling stock, power supply, design of stations, and traffic operation are the subjects of other chapters in this publication, which is described in a foreword by Lord Ashfield as "a comprehensive record of a great concerted contribution towards the improvement of travel facilities for Londoners."

In all aspects of its new works programme, London Transport is showing itself fully alive to modern tendencies in industrial design, and this fact is recognised in the October issue of *Art & Industry** which is devoted to London Transport matters. Rolling stock exteriors and interiors, station buildings, general equipment, and examples of the board's publicity are illustrated, with comments on their artistic merits. A front-end view of a Metropolitan Line motor coach of the 1938 type is characterised as "a pure engineering solution which achieves, in its logic and integration, the most profound visual satisfaction." Similar appreciation is expressed of the complete and harmonious composition of carriage interior design, with its dominant horizontal emphasis achieved by the continuous window line, and seat backs coinciding with the bottom edge of the windows, with lateral and transverse seating to afford visual interest. London Transport stations are described as "the embodiment of functional architecture," with special reference to the manner in which shops and kiosks are integrated with the design in such a way as to contribute to the structural composition. The London Transport diagrammatic railway map, on the usefulness of which all travellers are agreed, is discussed from the point of view of its composition and colouring, and even the route diagrams in the board's railway coaches are shown to be not only informative, but also "visually satisfying as a purely abstract pattern." With public interest in design being stimulated by the "Britain Can Make It Exhibition," it may be expected that these less obvious aspects of London Transport amenities in due course will be appreciated as they deserve, in spite of the distractions of hurry and congestion with which they so often have to compete.

Electrification in Spain

AS already announced in our columns, the Spanish Government is about to embark on an extensive programme of railway electrification, covering a route mileage of 4,500 km., or nearly 2,800 miles. The subject has been under consideration for some time, and had it not been for the disturbed conditions in the country of recent years and the unfavourable effects of the general European situation, there is little doubt that electric traction already would have supplanted steam on numerous sections. It had been applied on some of the smaller private lines before the 1914 war, but was not seen on a principal main-line system until 1924, when the Norte company converted the extremely difficult Pajares pass section, between Ujo and Busdongo, on the León-Gijón line. The 3,000-volt d.c. system with regenerative braking was adopted. This section is nearly 40 miles long, single line, and has no fewer than 70 tunnels, several over 1,000 m. (1,094 yd.) long, with frequent curves and viaducts. A double loop, terminating at Puente de los Fierros, makes the distance between that point and Busdongo—only 11 km. (6.8 miles) as the crow flies—42.6 km. (26½ miles).

The results of the conversion exceeded all expectations, and the improvement in the volume and working of the traffic amply justified it. The other most important sections were, until recently, those between Alsasua and Irún (French frontier) and Barcelona, Manresa, and St. Juan de las Abadesas, also on former Norte territory. The Barcelona lines were suffering competition from road transport and separately-owned local lines, worked electrically, while on the Irún line it was desired to improve the services and the speeds of the fast trains without increasing the axle loads, to do which would have necessitated costly bridge strengthening works.

The last two years have seen the electrification of the important Norte routes between Madrid, Avila, and Segovia. The 1,500-volt d.c. system used on the Irún line was applied there, but it has been decided to adopt the 3,000-volt system as standard and convert these recently electrified sections to suit. However, the 1,500-volt system will be retained for the routes now to be electrified north of Burgos and Castejón, which will join up with the Alsasua-Irún section. The existing rolling stock operating out of Madrid and Barcelona will be transferred in due course to this area. In January of this year, the plan now decided on, the outcome of many proposals and long discussions, was set in motion by a Decree of the Minister of Public Works, who shortly afterwards made an Order, in consultation with the railway authorities, setting forth in detail the various sections to be converted during the next 12 years, with the order in which, as far as practicable, the work shall be done.

As in Switzerland, the electrification of the entire national railway system ultimately is no doubt envisaged, but the present programme covers all those sections where considerable and immediate benefits should follow their conversion.

The plans so worked out received formal support from the Cortes, which had to sanction the financial arrangements involved, at its sitting of April 24, when the measure was introduced by Señor González Bueno, who reviewed the reasons why Spain should turn to electric working. The country, he said, was well endowed with water power, by developing which the existing supplies of electrical energy easily could be multiplied five or six times. Its coal, however, was not of a quality well suited to locomotives, and the conversion was expected to yield a saving of about 15 per cent. on the total production of the country, an amount which, if used in ordinary steam generating stations, could provide twice the amount of power required to run all the railways. In this way, therefore, a great quantity of fuel would be freed for other industries and uses where it was much needed. The gradients on the Spanish lines, too, are very unfavourable to steam traction. There is scarcely an important route that does not cross some high range, and on the lines now to be electrified the average conditions of gradient are rather worse than those met with in Switzerland, so that the only practicable way to improve the services is to abandon steam.

Continuing, Señor González Bueno dwelt on the present unsatisfactory state of the rolling stock and other equipment. Even now, after considerable efforts have been made to repair losses, there are 120 fewer locomotives—many of which are of old design—than in 1936, and 1,700 fewer coaches; the position as regards wagons is somewhat better. The overall efficiency of operation has markedly diminished in the ten years. The necessity of importing so much material in the case of road transport renders it particularly desirable, as a point of national policy, to develop railway rather than road facilities. This can be done by electrifying in such a manner that a large reduction in the quantity of rolling stock required eventually can be made. Even on the comparatively short sections already converted, results are excellent; on the Madrid-Avila-Segovia routes, both passenger and freight traffics already have doubled themselves.

Side by side with the work of conversion will go that of modernising the other equipment, particularly the signalling, still of very simple character on many routes. It is proposed to adopt the most improved apparatus throughout, particularly track circuiting and automatic colour-light signalling, a few installations of which have been in service for some time. At the same time opportunity probably will be taken to reform the signal aspects and get rid of the white light, and to introduce uniform operating rules. The Spanish Government considers it of fundamental importance, as Señor González Bueno particularly emphasised, to encourage to the fullest extent the development of the electrical engineering industry, an industry specially suited to a country having resources in water power, and electrification of the railways thus will form a step in electrification generally. The work will have to be done in association with the leading foreign manufacturers, already concerned in equipping the sections now operating, several of whom have established works in Spain or have made arrangements with existing ones where the production of at least a large part of the equipment to be called for under the new programme could be effected.

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LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Flat-Bottom Rail Defects

Agent-General for New South Wales,
Strand, London, W.C.2. October 3
TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I have read with interest the article on flat-bottom rail defects in your issue of September 27, and hope that the fact that so many defects are coming to light on American railways will not cause undue apprehension among the British companies, which are contemplating extension of their use.

Flat-bottom rails of weights varying from 7½ lb. to 107 lb. have been used on the New South Wales Government Railways since their inception, and, although a number of transverse fissure failures have been experienced to date, shelling or flaking of the gauge corner of the high rail on curves has not been experienced. It is confidently expected that the controlled cooling arrangements now being adopted will largely obviate the former trouble.

The irregular surface hardening of rails or corrugations has been found to have a direct relation to the carbon content of the steel used in the manufacture of the rails, and to the density of traffic. The reference to the flame tempering of the rails is interesting in view of the fact that it is stated that the hard spots disappear under traffic. Experience with surface grinding of corrugated rails has shown that the removal of the hard spots is quickly followed by further hardening of the former soft spots, which, when combined with the exposure of the soft cores under the original hard spots, resulted in further corrugations, the troughs becoming crests and vice versa.

Rail-end batter with flat-bottom rails would appear to be more prevalent than with the bull-head rails, but this feature, together with fish-plate breakage, can best be eliminated by the welding of rails into long lengths.

Yours faithfully,

K. A. FRASER,
Deputy Chief Civil Engineer,
New South Wales Government Railways

Destination Boards

25, Queen's Road,
Kenilworth. September 28
TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—A matter to which the railways could profitably devote some attention at the present time in the introduction of a clear and concise means of showing the destination of the trains, and preferably one which can become common to all four companies. During the war we became habituated to a general absence of any indication whatsoever, but I trust this state of affairs is not to become a permanent feature of British railways in the future.

In pre-war days the best trains of all companies were usually boarded adequately, the L.M.S.R. method of side boards under the roof eaves, with its generous-sized lettering, being the best in my opinion, as the more customary roof boards cannot be seen to advantage in certain positions, particularly close to in stations where, of course, a good view is essential.

During the 1930s, however, a particularly pernicious practice became prevalent on the L.M.S.R. which has since spread in a lesser degree to some of the other lines, and that is, the substitution of the side and roof boards by a completely insignificant label pasted on a compartment window.

Apart from the difficulty of locating them, these labels, being subject to wind and weather, are liable to become detached; on the other hand, they have a nasty habit of staying on too long, and when found show a destination referring to a journey or two previous. Only the other day I noticed a secondary main-line train carrying four different labels, not one of which was correct. This kind of wrong information leads to confusion, and does not exactly smooth the way for the traveller; neither is it likely to raise his regard for the efficiency of the railways.

A more recent tendency, accelerated by wartime difficulties, is at the larger stations to rely solely on a public-address system for dispensing information. This is, I think, to be deprecated, as, whilst these systems are admirable in their way, they are better suited to supplementing the normal visual methods and for out-of-course running and emergencies.

Apart from persons suffering from defective hearing, it is not always possible for the normal individual to understand the announcements owing to the various extraneous

noises peculiar to stations; at the same time it can be extremely irritating to have an announcement repeated *ad nauseam*.

A further point is the desirability, especially on long-distance trains, of showing the originating point as well as the destination as an aid to passengers and to station staff in identifying readily a particular train.

Yours faithfully,
L. BUROW

Riding Qualities of Multiple-Unit Trains

Southern Railway,
General Manager's Office,
Waterloo Station, S.E.1. October 7
TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I have read with much interest the letter from "Southern Passenger" which appeared in your issue of October 4 in connection with riding qualities of multiple-unit trains in the Brighton, Worthing, Eastbourne, and Bognor services.

Your correspondent is obviously an experienced traveller who has made a study of the riding qualities of the various rolling stock on which he expresses an opinion. I would like to point out, however, that but for the war, the bogies of the original 6-coach express units would have been replaced by bogies giving better riding than those under any of the existing rolling stock.

The company has this alteration in hand at the present time, and it will be carried out as expeditiously as the present difficulties of labour and materials will permit. It is hoped that the first set of converted vehicles will be in traffic in the near future.

Yours faithfully,
C. GRASEMANN,
Public Relations & Advertising Officer

"Poynings," Croydon Lane,
Banstead, Surrey. October 1
TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Mr. Watts's experiences need, I think, some qualifications so far as Southern Railway electric stock is concerned. There is no doubt that the heavy unsprung weights on the axles of the motor bogies make the riding qualities of the end coaches of each unit inferior to that of the trailing coaches. This is accentuated particularly in the case of the 6-coach units on the Brighton, Littlehampton, and Eastbourne expresses where power is provided through both bogies of each end coach. The rough riding was just as prevalent in the early thirties when the stock was first introduced, and is not in my opinion primarily due either to defective track or maintenance, though it might perhaps be minimised by more effective springing and suspension, or, better still, by adopting the flexible drive principle which has made its appearance in Switzerland.

The trouble is not so marked on the Bognor and Portsmouth 4-coach corridor sets in which power is provided only through one bogie at each end, nor in the case of the main-line intermediate and suburban stock which works on the same principle and has a simpler form of springing.

The running of the trailer coaches is in all cases considerably better, particularly the main-line corridor coaches which have cylindrical buffers throughout (as opposed to the combined centre buffer and coupling of the ordinary electric stock). In fact, the riding of the trailer coaches on the Bognor and Portsmouth trains, and those in the 6-coach sets with a pantry car on the other lines, is consistently good and compares favourably with any main-line running in the country; the trailing coaches of the original sets containing a Pullman car built for the Brighton and Worthing electrification scheme do not reach quite such a high standard, doubtless because of their different and apparently more elaborate form of springing.

In my view, with the exceptions mentioned above, the riding qualities of Southern Railway stock generally are of a very high order.

Yours sincerely,
A. R. MORDAUNT

PHOSPHATE COATINGS AS A BASIS FOR PAINTING STEEL.—Recommendations for phosphate coatings as a basis for painting steel have been issued by the British Standards Institution as an interim measure for the assistance of industry. Instructions are given on the method of application of satisfactory coatings, and elementary tests of the suitability of the coating are described. It is stated that research is in progress, and that it is intended to prescribe performance tests as soon as sufficient data is available. Copies (P.D.539:1946) of the recommendations may be obtained from the Publications Department, British Standards Institution, 28, Victoria Street, London, S.W.1, price 1s., post free.

The Scrap Heap

THE MISSING MONTH

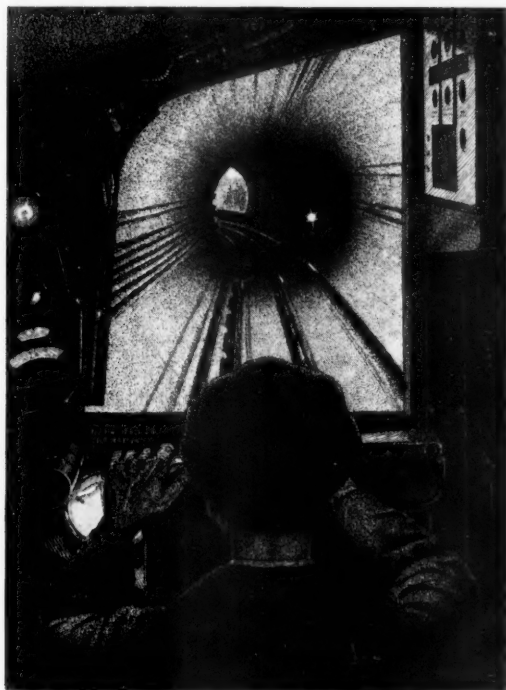
This month, when habitual readers of "Bradshaw" normally intensify their efforts to obtain a copy in order to study the winter train services, their quest will be fruitless and the bookstalls bare. It has been announced that no October issue of the guide will be published in consequence of difficulties arising from the recent ban on overtime in the printing industry, and the next "Bradshaw" will appear in November. Thereby a sequence of monthly publication which has been unbroken for 107 years is interrupted for the first time. Commenting on the fact that "Bradshaw" is often held to be a maze wherein bemused travellers languish amid figures and footnotes, *The Manchester Guardian* has observed: "They will languish with a good deal more certainty now that that exhaustive survey of train times and connections is silent on the subject of October changes. We can accept 'slip-coaches,' but not slipped 'Bradshaws.'"

100 YEARS AGO

From THE RAILWAY TIMES, October 10, 1846

BLACKWALL RAILWAY.—A few gentlemen, largely interested in this undertaking, have formed a Committee for the purpose of testing the opinions of the Shareholders as to the competency of the present Directors to conduct the negotiations which it is understood are in progress, or in contemplation, for leasing or selling the Black-wall line to one of the great Companies. Shareholders disposed to co-operate, are requested to communicate by letter, addressed to "The Blackwall Railway Shareholders' Committee," George and Vulture Tavern, Cornhill.

Motorman's View in the Tube



A pen-and-ink drawing by Mr. A. T. Gorton, a motorman at the London Transport East Finchley depot, of the view from the motorman's compartment of standard 1938 type L.P.T.B. stock

PROFESSIONAL FEES

Mr. Mapperley advances the point that the 12s. 6d. capitation fee is adequate as judged on the commercial principle that payment should have some relation to the work performed. As a means of assessing the remuneration of the expert, doctor, or any other, this is surely a wholly inadequate yardstick.

I am reminded of the story of the expert called in to attend a machine that could not be induced to function. After tapping it in various places and adjusting a few screws, the machine performed perfectly, and he presented a bill for £50. This seemed excessive to the management, who returned it, asking for details and pointing out that all he had done was to spend half an hour on the machine, tapping it with a hammer and making some very minor adjustments. The engineer presented his account again:

To tapping machine with hammer, £1.
To knowing where to tap machine with hammer ... £49

Your readers, as no doubt your correspondent, will be able to recall many instances where work seen to have been performed would constitute no equitable basis for determining payment.—*Mr. Thomas Shaw in a letter to "The Manchester Guardian."*

OLD KING COAL AGAIN

The news that a thousand railway locomotives are to be converted from coal to oil has aroused little interest in the press, and some of the publications that did notice the news talked as if this would solve our coal problem. Let us be quite clear what is involved. The net result will be a saving of about a million tons of coal a year, that is, approximately, $\frac{1}{3}$ per cent. of our annual production and about one-fifteenth of the quantity used by the railways. A saving of a million tons of coal is by no means negligible, but it will hardly make a great deal of difference in the long run, and will, in any event, involve the importation of an equivalent quantity of liquid fuel, using valuable shipping space and depleting our foreign exchange.

The change-over will cost the Treasury £1,000,000 a year represented by subsidies, or, at a later date, a loss of import duties. The running costs to the railways will probably be 50 per cent. greater, quite apart from the capital costs of conversion. If Mr. Shinwell's ambitious hopes are realised we shall be able to export 8 million tons of coal during the next twelve months instead of 7 million tons; neither of these figures is impressive when it is remembered that coal exports a decade ago amounted to 50 million tons annually.

We take little comfort from the news that Britain,

Are you a Promising Railroader?



[From "Company Manners" issued by the New York Central System]

In all dealings with the public, be careful of promises. Make them only when their fulfillment is reasonably certain. Nothing shakes a patron's confidence in the Railroad so completely or earns more ill will than a rashly made promise that is not kept.

whose prosperity was built on coal, is changing over to liquid fuel. Oil is admittedly cleaner, and easier to handle, but is more expensive. Industrial users who convert to oil may well regret it in a few years' time.

We do not blame Mr. Shinwell for the coal shortage, since it was not his doing. But we do suggest that the way to solve the coal problem is to produce more coal, not to use a more expensive foreign alternative, which in any case does not really solve the problem. We might just as well solve the beer shortage by changing over to champagne.—*From "The National News Letter."*

NAMED TRAINS IN THE U.S.A.—8

Name	Passenger Railway	Scheduled run
Ambassador	... B. & O. Pere Marquette	Washington—Baltimore—Detroit
Bullet	... Pennsylvania	Wilmingon—Easton
Daylight	... Illinois Central	Chicago—St. Louis
El Dorado	... Southern Pacific	San Francisco—Sacramento
Green Diamond	... Illinois Central	Chicago—St. Louis
Neptune	... N.Y., N.H. & H.	New York—Cape Cod
Pony Express	... Union Pacific	Kansas City—Los Angeles—Seattle
Rainbow	... Pennsylvania	Chicago—New York
Scout	... Atchison, Topeka & Santa Fe	Chicago—Los Angeles
Star	... Lehigh Valley	New York—Philadelphia—Buffalo
Wolverine	... New York Central	New York—Boston—Chicago

Name	Goods Railway	Scheduled run
Thunderbolt	... Chicago & Eastern Illinois	Chicago—Evansville
Tom Cat	... Norfolk & Western	Roanoke—Winston-Salem
Whippet	... Rutland	Bellow Falls—Alburch

AT THE RAILWAY CHARGES CONSULTATIVE COMMITTEE

Cross-examining Mr. C. R. Dashwood on behalf of the British Coking Industry Association, Mr. Jacques Abady said he thought that both Mr. Dashwood and Mr. Pope had admitted the very great difficulty of estimating traffic receipts and expenditure for 1947.

Mr. Dashwood: That is why we have gone to so much trouble, sir.

Mr. Abady: You do not claim to be infallible?

Mr. Dashwood: I certainly do not.

Mr. Abady: And I do not think Mr. Pope claims to be pontifical; that is right, is it not?

Mr. Dashwood: I will leave that to him.

DOG'S EIGHT-MILE RUN IN TUBE

A dog which strayed into the Angel Underground station of London Transport recently, jumped on to the line to escape officials who were trying to catch it and ran non-stop through the tube tunnel for eight miles ahead of a train. It surfaced eventually at Clapham Common, where it was last seen by the ticket collector as it dashed up the stairs and into the street ahead of a crowd of passengers.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Vereeniging-Rand Lines

Railway construction materials are beginning to arrive in the Union from overseas, and it was stated in Johannesburg recently that early next year it should be possible to begin work on the electrification of the Johannesburg-Vereeniging railway lines, as well as the laying of a double track on both the present routes. The importance of Vereeniging has been greatly increased by the fact that it is the nearest major industrial centre to the new Free State goldfields, and the railway linking the town with the Free State, via Kroonstad, is also to be doubled. For this purpose a new bridge, costing £320,000, will be built over the Vaal to replace the present single-track bridge built in pre-Union days.

The original main line to Union provides Vereeniging with direct access to Germiston and the East Rand, and the line through Langlaagte and Midway affords a link with Johannesburg and the West Rand. The Reef-Vereeniging lines, when electrified and doubled, will provide more frequent and faster trains between the two centres. These will be the first electrified lines in the Transvaal away from the Witwatersrand.

A goods avoiding line linking the two routes will also be constructed just north of Vereeniging to relieve the station of traffic with which it is not directly concerned. The total cost of these improvements will exceed £1,100,000. A new modern station will also be constructed at Vereeniging at a cost of £165,000.

New Wagons

More than £4,500,000 is involved in an order placed recently by the South African Railways with Dorman Long (Africa) Limited. The company will build 4,500 trucks for the railways, and has undertaken to deliver 1,200 in 1947, 1,500 in 1948, and 1,800 in 1949. The cost of the wagons corresponds very closely with the prices quoted by overseas firms. For instance, the imported "DZ" drop-sided steel bogie wagon costs approximately £1,275, while the South African product will be delivered at £1,340.

The Minister of Transport has approved of tenders being invited for a further 3,490 railway wagons of different types, including 500 for fruit, and 1,500 for cattle traffic. Also on order are 1,500 wagons from Canada, of which 300 have been delivered; 500 from Britain, of which 310 are in service; and the 4,500 in the Union mentioned above, giving a grand total of 10,190 wagons to relieve the pressure of goods traffic and to make up the leeway lost in the war.

Passenger Stock and Locomotives

Corresponding efforts are being made to improve passenger facilities. For the Western Transvaal system alone, 86 motor coaches and 165 trailers are expected. Orders have been placed also for main-line saloons and other coaches, but replacement is slow owing to the inability of the manufacturers to give prompt delivery.

Engine power has improved to some extent following the delivery of 90 class "15F" engines (completing the order for that type, as reported in *The Railway Gazette* of August 2) 19 class "19D" engines, and 18 large Garratts. But even

this position is not satisfactory, since during the war engines which were due for retirement had to be used. Nevertheless the position is better, and the railways should soon be able to handle all traffic offering without delay. Total traffic conveyed in the last ten years has grown from 26,247,902 tons to 48,205,806 tons for the year ended March 31 last. Reef suburban traffic increased by 4,709,666 passenger journeys in six months. The grand total for the first half of the year reached the new record of 43,000,000.

RHODESIA

Rates at 1939 Levels

The general level of railway charges in Rhodesia is the same today as it was in 1939, in which year various reductions in rates and fares were made, mainly by elimination of the 10 per cent. surcharge imposed in 1932. No increases were made during the war in spite of considerable increases in working expenditure. In many instances individual rates have been reduced, particularly for foodstuffs imported from the Belgian Congo, Argentina, and elsewhere. During the current year the Rhodesia Railways have budgeted to withdraw £721,000 from the Rates Stabilisation Fund in order to balance revenue and expenditure, but continued heavy traffics make it unlikely that the whole of this amount will be required. Total tonnage landed at the Port of Beira up to the end of June this year, for example, was 317,665 tons, compared with 348,426 tons during the whole of the previous twelve months.

Gross earnings of the railway for the eight months to May 31 last were £4,684,238, an increase of £64,827, but operating expenditure was £340,994 higher, so that net operating revenue decreased by £276,167. Passenger traffic in May showed an increase of 13,238 in journeys and £3,958 in receipts. Coal and coke tonnage in the same month was 144,907 tons, or 8,899 tons higher, and other minerals also showed increases, notably 2,000 tons in copper for export and 1,176 tons in zinc.

INDIA

New Railway Survey Sanctioned

The Railway Board has sanctioned the making of engineering and traffic surveys by the North Western Railway for a line on the broad gauge from Khushab to Darya Khan, via Nurpur, a distance of about 70 miles. It will be known as the Khushab-Nurpur-Darya Khan Survey.

Hours of Employment on Indian Railways

The number of railwaymen entitled to protection under the Hours of Employment Regulations increased from 598,151 in 1943-44 to 650,148 in 1944-45, according to the latest annual report of the Chief Labour Commissioner. These regulations implement the Washington Hours of Work Convention on Class I Railways in British India, and prescribe a 60-hour week, compensatory rest, and overtime allowances to railwaymen classified as "continuous." The number of continuous workers increased by 53,932 in 1944-45 as compared with the previous year.

The percentage of continuous workers improved considerably on all railways except on the East Indian, Bengal Assam,

Oudh & Tirhut, and Great Indian Peninsula Railways. The percentage of "essentially intermittent" staff, that is, those who have an 84-hour week without any period of weekly rest, decreased on all railways excepting the East Indian, Oudh & Tirhut, and Great Indian Peninsula Railways. The percentage of staff entitled to one calendar rest day a week improved on the North Western, Bengal Assam, and South Indian Railways, the increase being 16.8 on the last-named.

Rolling Stock for 1947-48

A total expenditure on rolling stock for 1947-48 of Rs. 982,000 (£73,650 sterling) was approved by the Standing Finance Committee for Railways, which met at New Delhi in July last under the chairmanship of Mr. I. S. Puri, Financial Commissioner of Railways. The programme includes the construction in India of 40 metre-gauge passenger locomotives, 1,953 units of broad-gauge and metre-gauge coaching stock (in terms of 4-wheelers) at a cost of Rs. 591,000 (£44,325), and also of 3,300 broad-gauge 4-wheel wagons at a cost of Rs. 306,000 (£22,950).

The committee approved of the order placed in the United Kingdom for the purchase of 100 express passenger locomotives, and also endorsed the Railway Board's proposal to reserve capacity for a further 300 passenger locomotives for delivery by 1950, with the recommendation that the search for this capacity should not be limited to the United Kingdom alone, nor even to the sterling area, but that it should be reserved wherever available at the most economic prices.

Works Programme

The committee approved of an expenditure of Rs. 19,800,000 for additions to, and replacement of, machinery and plant during 1947-48. Also, the first stage of the scheme for improving facilities in the Bokaro, Karanpura, and Barawadih coalfields, estimated to cost Rs. 217,200,000 (£16,290,000), met with the committee's approval.

WESTERN AUSTRALIA

Tool Room at Midland Junction

During the war a modern tool and gauge room for the manufacture of precision tools was constructed at the Midland Junction Workshops of the Western Australian Government Railways. The initial purpose of the room was for the production of the very accurate tools and gauges required for the small-arms factory at Welshpool, and for the manufacture of tools that could not be imported from the Eastern States or from overseas. The Western Australian Government and the Australian Commonwealth Government combined to establish the room, and a long-range plan envisaged the production of tools and gauges required by the railways and industry generally after the war.

To interest local industrial and manufacturing concerns, prominent Perth businessmen recently were given an opportunity of inspecting the workshop. Among the party were the Minister for Railways (Mr. W. M. Marshall), the Minister for Industrial Development (Mr. A. R. G. Hawke), and the Commissioner of Railways (Mr. J. A. Ellis).

Mr. Marshall addressed the party at a luncheon. He said that now the war was over, the Railway Department was not using the room to 100 per cent. capacity, yet tools could be produced there as cheaply as in the Eastern States and give

as good, if not better, value. He urged Western Australian industrialists to place orders with the tool room and expressed confidence that they would be well satisfied. Young men were being highly trained in Western Australia, he said, but they were leaving the State because they could not find work equal to their qualifications. Placing orders at the tool room would assist in employing some of those men, keeping Western Australian artisans in Western Australia.

Mr. Lance Brisbane, ex-Chairman of the Board of Area Management, Munitions Department, thanking the Commissioner on behalf of the industrialists for arranging the inspection, said that while he was associated with the Welshpool munitions factory he had the opportunity of comparing the costs of tools and gauges manufactured at the Midland Junction tool room with those produced in the Eastern States and by private manufacturers. In many cases the costs compared more than favourably, and often were below the prices of the same article produced elsewhere.

UNITED STATES

Milestone in Locomotive Construction

The 75,000th locomotive built by the American Locomotive Company was completed at Schenectady on September 19, amidst a celebration attended by civic and business leaders. Subsequently this 6,000-h.p. Alco-G.E. diesel-electric streamline locomotive was exhibited on the private siding of the Waldorf-Astoria Hotel, New York, which had been transformed into a western desert setting in honour of the Atchison, Topeka & Santa Fe Railway, which shortly will take delivery of the engine for service between Chicago and the West Coast. Five similar locomotives for the Santa Fe already are under construction at the American Locomotive plant in Schenectady.

An unusual contrast with the new locomotive was a full-size scale model of the American Locomotive Company's first locomotive, the *Sandusky*, which was built at Paterson, N.J., in 1837. A thousand leading railway, industrial, business, and transport leaders attended a dinner in the Grand Ballroom of the Waldorf-Astoria, where they heard an address by Mr. F. G. Gurley, President of the Santa Fe Railway. A group of more than thirty Indians from New Mexico and Colorado performed a number of native tribal dances, and two Indian soloists sang during the dinner.

CANADA

Plea for Improved "Ocean Limited"

Replying to a request that the Canadian National Railways should improve the "Ocean Limited" express between Montreal and Halifax, the Hon. Lionel Chevrier, Minister of Transport, promised that he would see the railways explored the idea. The request came from Mr. Frank T. Stanfield, who pointed out that the train ran on a schedule about the same as 30 years ago. He urged that the 800 miles between Montreal and Halifax should be done in 20 to 21 hr., leaving most of the parcels and mail and the smaller station stops for the other two trains that now serve the line. Equipment on the "Limited" was, he said, "very old" and should be replaced with new stock when possible. He felt that people would be willing to pay an extra fare for modern equipment. To continue the present policy would invite loss of traffic.

The Minister of Transport, in reply, stressed the difficulties in getting equipment because of the war. The Maritime Provinces were not the only ones without modern facilities. New equipment was being manufactured, including some in the Maritimes, and he was hopeful that it would be possible to put some of the new coaches on that line.

EIRE

Prefabricated Portable Messrooms

Having developed the use of reinforced concrete extensively in recent years, Coras Iompair Eireann is now using this material to solve a staff accommodation problem by the production of prefabricated hutments. These are portable, and will accommodate the special transport staffs which, from time to time, are concentrated at various places in the country, to deal with seasonal traffics such as beet, grain, wheat and turf.

Formerly, coaching stock was converted into movable messrooms for these staffs, but was far from satisfactory. In the absence of steel and timber, the Chief Engineer, Mr. T. R. Leonard, decided to experiment with concrete, and the Inchicore Works have now produced a neat and easily-erected all-concrete structure. Six are already in use.

A characteristic messroom is 25 ft. 7½ in. × 11 ft. 3 in., and 8 ft. 6 in. high. It is constructed in 20 sections, with a doorway. The slabs for sides and gable, 1½ in. thick, are supported on the ground by plinths and heavy posts. All parts are interchangeable, except for the roof slabs. The structure is put together without the use of mortar or fresh concrete at any part, but for a complete finish, the joints may be sealed temporarily with a synthetic cement. A messroom holds 18 men at a meal, is fitted with range and hot water service, sink, cupboard and press, and lighted by electricity.

DENMARK

The State Railways in 1945-46

The main results of working the Danish State Railways in the year ended March 31, 1946, are shown below, in comparison with the corresponding figures for 1938-39 and 1944-45:—

	1938-39	1944-45	1945-46
Kilometres open ...	2,553	2,552	2,556
Passengers (millions)	56.5	84.3	79.3
Goods (millions of tonnes) ...	5.17	9.80	9.84
Train-km. (millions)	30.06	19.55	17.91
Operating ratio ...	103.6	84.2	101.4
Million kroner			
Passenger receipts ...	63.4	144.7	125.3
Goods receipts ...	51.0	140.3	112.3
Bus receipts ...	4.9	3.1	3.8
Other receipts ...	6.8	10.3	11.4
Gross receipts ...	126.1	298.4	252.7
Working expenditure ...	130.6	251.3	256.1
Net deficit ...	4.5	47.1	3.4
Depreciation charges ...	6.9	67.4	4.8
Interest on capital ...	14.2	10.2	10.4
Deficit after charges ...	25.6	30.6	18.7

In comparing these figures it must be taken into account that for the year 1944-45 an amount of Kr. 62.3 million was reckoned as income from the German Wehrmacht (although the amount, of course, never was paid by the Germans, but by the Danish National Bank). In number of journeys and goods tonnage this German traffic (calculated at 3.9 million passengers and 2.57 million tons) is not included.

Road Traffic Diverted to Rail

Comparing the last pre-war year, 1938-39, and the first year after the war, there was an increase in the number of passengers carried of 40 per cent., in spite

of the much reduced train service. The increase was higher for Copenhagen suburban traffic than elsewhere. This traffic amounted to 32.8 million passengers in 1938-39 and 49.3 million in 1945-46, an increase of 50 per cent. The increase in passenger traffic is due in part to the restrictions on private car and bus journeys.

The increase in goods traffic is even higher, amounting to 91 per cent. Here, too, restricted road traffic accounts in part for the increase. Another reason is that the sounds and belts round the Danish islands are not fully cleared of mines, so that many small cargo ships have not yet begun sailing on their normal routes. But the main cause is the large amount of home-produced brown coal and peat carried on the railways.

Considering the receipts, it must be remembered that between 1938-39 and 1945-46 there was an increase in both rates and fares of 25 per cent. After reducing the 1945 figures by this percentage, the increase in passenger receipts amounts to 58 per cent., and in goods receipts to 76 per cent. It must be remembered, also, that the timetable passenger train service was reduced to negligible proportions in 1945-46.

Train-Mileage Statistics

Again comparing 1938-39 with 1945-46, the numbers of staff rose from 21,501 to 26,661. Passenger train-km. fell from 22.4 million to 9.3 million, and mixed train-km. fell from 1.98 to 0.22 million, but goods train-km. rose from 4.35 to 8.37 million. About 70 per cent. of the train-mileage was worked by steam trains, 20 per cent. by diesel or petrol railcars or trains, and 10 per cent. by electric trains.

SWITZERLAND

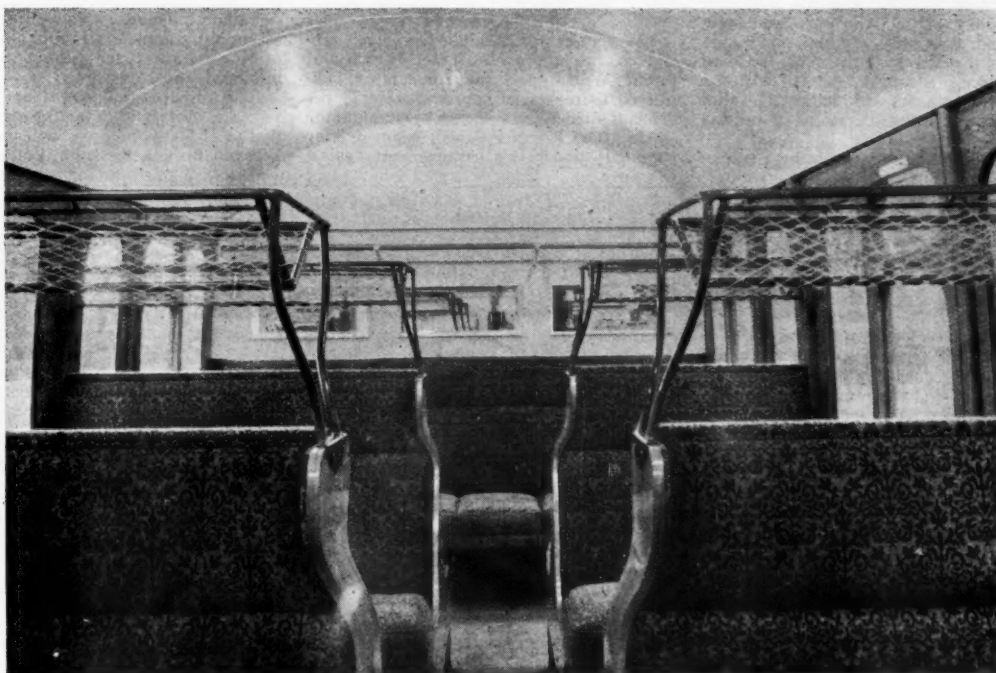
The "Engadine Express"

Shortage of locomotives has made it necessary to modify the present "Engadine Express" services, which were restored on October 7, in comparison with those operated before the war. At that time two trains connected at Coire with the "Engadine Express" from Calais, both serving St. Moritz, but one running via Thusis, Tiefencastel, and Filisur; and the other via Landquart, Davos, and Filisur. In the current timetables only the connection via Davos is provided, and by this route the journey from Coire to St. Moritz is 76.3 miles, as compared with 55.9 miles by the western route. This longer journey has evoked criticisms from St. Moritz, but the Rhaetian Railways have issued a statement that the arrival and departure times of the Calais-Coire section of the service at Coire (1.2 p.m. from Calais, departing again at 5 p.m.), make it impossible to provide locomotives for two connecting trains in each direction. It was pointed out, also, that the journey from Coire via Davos is only 25 min. longer than by the other route.

The position was examined also by the Federal authorities, who found that no other solution would have been possible for the Rhaetian Railways in the present shortage of locomotives. Four locomotives ordered some time ago by the Rhaetian Railways will not be delivered till next summer at the earliest, instead of this December as originally expected. A credit of fr. 2,175,000 in connection with that order was granted as long ago as February, 1945. Once the locomotives are available, the "Engadine Express" connections will be operated as before the war.

New All-Steel Electric Sets, Southern Railway

(See article on opposite page)



Interior view of saloon, showing arrangement of seats

Large Spanish Electrification Programme

A 12-year plan has been sanctioned, comprising the electrification of nearly 2,800 miles of route and including new signalling, telecommunication equipment, and other improvements

AT the beginning of this year the Spanish Minister of Public Works, Señor F. Ladreda, issued a Decree, followed by an Order covering certain details of procedure, inaugurating a programme of electrification extending over 4,500 km.—nearly 2,800 miles—of broad (Spanish standard) gauge route. This accounts for more than half the mileage represented by the two principal former railway systems, the Norte and the Madrid-Zaragoza-Alicante, which together totalled just over 4,590 route-miles. The Minister laid down at the same time, in consultation with the railway and other authorities concerned, the order in which—subject to any modifications required as the work proceeds—the various stages of the conversion are to be effected, as follows:—

León—Ponferrada, and León—Busdongo
Mora—Reus—San Vicente—Villanueva—Barcelona—
Mataró—Empalme
Ujo to Gijón, and Asturian Branches
San Vicente—Villafraña—Barcelona—Granollers—
Empalme, and Granollers—Las Franquesas
Lérida—Manresa
Reus—Tarragona—San Vicente, and Empalme—
Gerona—Cerbère (France)
Baeza—Alcázar
Madrid—Alcázar, and Algodor—Toledo
Madrid—Arcos
Miranda—Bilbao, and Miranda—Alsasua
Quintanilla—Santander
Medina—Ávila, and Medina—Segovia
Baeza—Córdoba
Burgos—Miranda—Castejón

Almansa—Valencia—Castellón, Silla—Cullera, and
Valencia—Liria
La Encina—Alicante, and Játiva—Alcoy
Córdoba—Bobadilla—Málaga (Harbour)
Alsasua—Pamplona—Castejón
Ponferrada to Monforte, and Toral—Villafraña del
Bierzo
Monforte—Vigo (Harbour), and Guillarey—Tuy
Lérida—Reus, Picamoixóns—Roda
Tarragona—Castellón
Valencia—Teruel
Valencia—Utiel
Monforte—Coruña (Corunna), and Betanzos—Ferrol
Redondela—Santiago—Coruña (Corunna)
Bobadilla to Algeciras
Gálor to Almería

The entire programme is to be completed in 12 years, and covers all those sections of line where immediate and appreciable economies and traffic operating advantages are known to be realisable. They are indicated on the map on page 412, which is based on one supplied by the Public Relations Officer of the R.E.N.F.E. system, Señor J. de la Fuente. Most of the main-line routes in Spain involve numerous heavy gradients, and in some localities a great many tunnels, which create considerable difficulties with steam traction. In addition, to get the best results, imported coal preferably must be used, as Spanish coal is not well-adapted for locomotive firing, and at one time large quantities of British coal were consumed. On the other hand, the country possesses appreciable resources of water power which, if properly developed, would serve

not only to supply energy to the railways, but to industrial and domestic consumers, with consequent improved load factor. At present the consumption of electricity per head of population in Spain is extremely low.

There is a shortage of locomotives and coaches, partly as a result of the disturbed political circumstances of recent years, and much of the locomotive stock is of old design. The situation has been remedied to some extent since the civil war ended by the purchase of a number of powerful modern locomotives of the best construction, but electric traction offers a means of working a much heavier traffic with less rolling stock and greater overall efficiency. It is expected that two types of electric locomotive will suffice for all purposes in conjunction with multiple-unit stock for such services as do not call for locomotives in any case.

Improvements in Signalling

Improvements in signalling are also urgently required over a large mileage, and the combination of electrification with a general use of colour-light automatic signalling would enable many much-needed improvements in traffic working to be obtained, together with increased safety in working.

At present much time is lost by slowing down at facing points, in obedience to old-fashioned rules, or in stopping or slowing to a walking pace for adverse outer-disc signals, the working of which fails to meet present-day requirements. Even with these disadvantages, electric traction has given excellent results on the sections of route

already converted. On some parts of these routes, however, modern signalling already has been adopted and has given every satisfaction.

As far back as 1928, plans for a general electrification of main routes were prepared, and a former Minister of Public Works in the Rivera Government, Count Guadalorce, strongly advocated the change for reasons of national policy apart from mere considerations of railway working.

The work will be carried out by a special

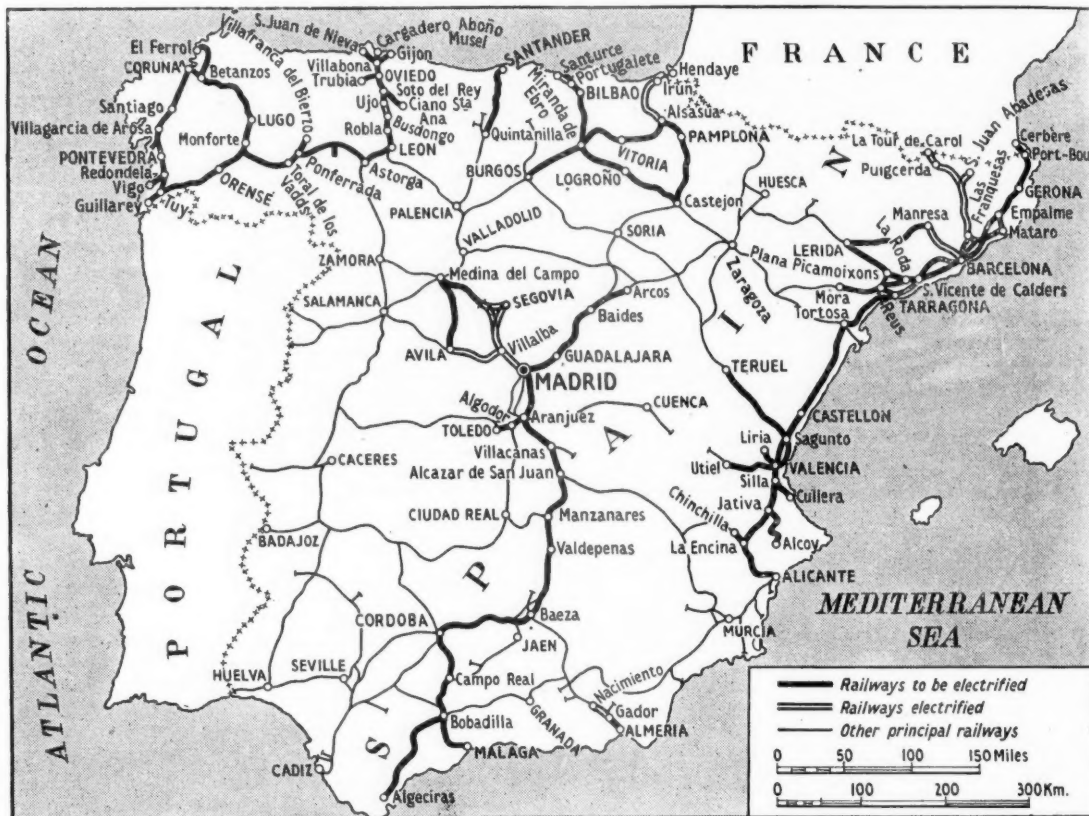
coal at a locomotive tender on the section concerned; and Pk the mean price per kilowatt-hour (high tension) on the same section.

Saving Realised

The figures so calculated will be subject to the approval of the Ministry of Public Works, and the constant is considered to represent approximately 75 per cent. of the saving realised by abandoning steam. The R.E.N.F.E. will begin making payments under this arrangement against

to be effected in Spain. The electrifications already working have been carried out on this basis, certain works in Spain co-operating with foreign establishments, and the same has occurred in regard to signalling. There is now a factory able to supply complete signalling installations of the latest type without recourse to imported apparatus.

It is now announced that the 3,000-volt d.c. system is to be the standard, but that a 1,500-volt area will be retained between Burgos, Castejón, Portugalete and



Map showing the principal railways of Spain and the electrified and prospective electric sections

department of the R.E.N.F.E. management, to be set up for the purpose, and its engineers will be responsible for laying down all necessary specifications and demands for equipment, the Ministry of Public Works exercising a supervisory control as regards technical standards and matters affecting public safety. There are to be separate accounts covering the main divisions of the contracts, namely, cables and feeder lines; sub-stations and transformer layouts; locomotives; motor coaches; subsidiary works; signalling and telecommunications. The main electrification account will be covered by the issue of bonds by the railway authorities, bearing the guarantee of the State, the payment of redemption and interest charges being a first charge on the savings effected by electrification, the amount of which will be calculated as a constant from time to time by the following formula:—

$$C = 1.50 K (1.75 P_c - P_k)$$

where K is the energy supplied in kilowatt-hours, on the high tension side of the sub-stations; P_c the mean price per kg. of

the advances made by the State as each section is put into service.

In order to give the scheme the maximum assistance possible, legislation has been passed exempting the necessary imports from all customs and other duties, and abolishing the stamp duty on patent agreements, transfers, and other contract or business documents associated with the work, on an extremely comprehensive scale; the interest on the bonds is apparently to be tax free, at least to a considerable extent. It is intended to enter into negotiations with the leading firms in the electrical engineering industry in other countries with the object of securing their technical advice and the services of their engineers in discussing with the R.E.N.F.E. the designs of equipment to be adopted and the organisation of the supply and installation work.

Whilst much apparatus of necessity will have to be imported, it is desired to promote home manufacture of certain items from the beginning, and ultimately to arrange for almost the entire production

Irún, where existing rolling stock will be concentrated. The 3-phase system is in use on the isolated Nacimiento-Gádor section, and will, therefore, be extended to Almería for convenience.

SAN PAULO ELECTRIFICATION ESTIMATES APPROVED.—Shortly before the taking over of the San Paulo Railway by the Brazilian Government was announced (see our September 20 issue), the President of the Republic signed a Decree-Law approving estimates amounting to \$186,460,197, for the electrification of this railway between San Paulo and Jundiáhy. By this Decree the San Paulo Railway was bound to carry out the work of electrification under its own responsibility in a stipulated time, and to limit costs to the amount approved in the estimates. It was further obliged to transfer the substation at Agua Branca to a point beyond the crossing by its lines of the River Tiete, and to make a connection with the Paulista Railway in the station yard of Jundiáhy.

Prevention of Locomotive Smoke

A summary of the American conference on this problem

THE thirty-ninth annual meeting of the Smoke Prevention Association of America was held in Minneapolis recently, and is reported in a recent issue of our contemporary, the *Railway Age*. The following article presents the chief points made in those addresses which touched on the problem of smoke abatement in coal-burning locomotives.

Mr. Roy V. Wright, Managing Editor of the *Railway Age*, showed that coal-burning locomotives were far from being the principal offenders in the production of smoke in cities. In Chicago in 1915 they contributed not more than 22.06 per cent. of the total smoke, according to the late Dr. Goss, and electrification since that date had reduced the percentage still further; the figure in 1939 had been only 10.15 per cent.

Apart from a desire to minimise the

prone to relax, the solution was to make the prevention of smoke as nearly automatic as possible. The use of overfire airsteam jets has dealt quite effectively with locomotive smoke prevention.

Automatic Controls for Overfire Air Jets

Mr. John Canetta, of the Westinghouse Air Brake Company, described a device developed by his company which was first applied to a Louisville & Nashville Railroad locomotive; a more recent application to a Chicago, Milwaukee, St. Paul & Pacific locomotive was demonstrated during the convention.

The stage has been passed when the use of the blower and the partial opening of the firedoor sufficed for the prevention of smoke. Hundreds of locomotives have been fitted with overfire air jets located on each side of the firebox, and many more

Manual control is dangerous because there is nothing to prevent the fireman from opening the firedoor when the jets are operating, so that flames may surge from the firebox, even in the presence of an effective draught. Automatic controls remove this hazard, for they are interlocked with the firedoor so that it is impossible for the jets to be in action when the doors are opened by the pedal of the door engine—whether intentionally or otherwise.

The automatic system is illustrated in the accompanying diagram.

When the firedoors are open the chimney blower is automatically turned on and a reservoir is charged with compressed air. As soon as the doors are closed, steam flows to the overfire air jets while the chimney blower continues to operate. The length of time during which the jets remain in action depends on the time to exhaust the reservoir—in practice, from 30 sec. to 3 or 4 min. Thus, though the jets are "primed" by opening the firedoors, they are allowed to operate only after the doors have been closed, and then only for

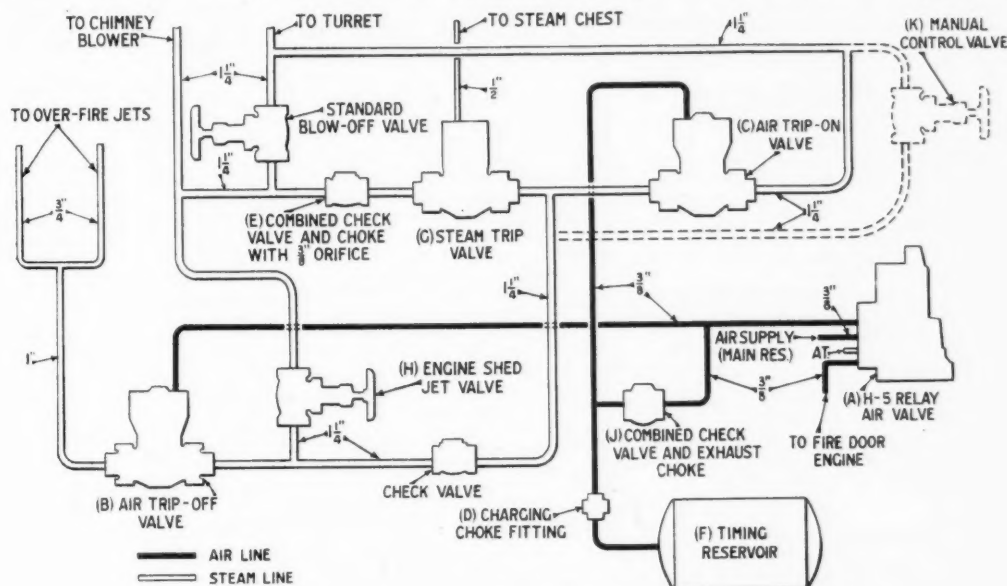


Diagram showing automatic smoke control for hand-fired locomotives

soot nuisance, the railway managements realised that smoke and soot were evidence of poor combustion and wastefulness. In Hudson County, New Jersey, in co-operation with the Stevens Institute of Technology, a Railroad Smoke Association was formed, and the railways operating in the county submitted monthly reports to the Association; today the smoke from coal-burning locomotives has been very greatly reduced in the county limits—on some railways, indeed, it has been very nearly eliminated. This organisation has the full co-operation of the county Department of Smoke Regulation, which is, incidentally, a part of the Department of Health & Vital Statistics.

It is a mistake to assume that the men on a locomotive are the only offenders in connection with the smoke nuisance. The locomotive designer, the men who maintain and repair the locomotive, and those who provide the fuel, as well as others concerned with locomotive and train operation, are all involved to a greater or less extent. Since the human element was

are being installed, since these devices have come to be recognised as the practical method of eliminating smoke.

These jets, however, are manually controlled, which may be satisfactory in the hands of an experienced, willing fireman, but not when under the control of the average man, who is liable to be distracted by his many other duties. Manual control is costly in the use of steam; it may be undesirable from an operating viewpoint; and it can be dangerous.

It is costly because, taking the case of a small shunter working 10 hours of a 20-hour day, and consuming about 10 tons of coal in that period, will require about 10 per cent. of the fuel to be used in operating jets if they are manually controlled and are operated continuously; with automatic control it would be about 1 per cent.

From the operating viewpoint, continuous operation of the jets causes local chilling and the "clinkering" of the fire, in the absence of positive draught. Inevitably this will necessitate increased firing and more work for the engine crew.

a limited time. It is thus ensured that the jets go into action immediately after firing, and for a period roughly proportional to the duration of opening of the doors—that is, the more the coal fired, the longer the jets will last.

In the diagram, relay air valve *A* is piloted by the compressed air which works the door cylinder. When the door pedal is depressed, the relay air valve allows main-reservoir air to flow in three directions: (1) to an air trip-off valve *B*, which promptly closes the steam line leading to the overfire jets; (2) to an air trip-on valve *C*, which opens the steam line leading to the chimney blower; (3) through a charging choke *D* to the timing reservoir *F*, which will continue to be charged for the duration of the door opening, or until main reservoir pressure has been reached. Steam is now flowing to the chimney blower through a $\frac{1}{2}$ -in. orifice in the combined check valve and choke *E*, but the jets are still held off. The first half of the operation is completed.

As soon as the firedoors are closed, the

relay valve *A* returns to normal position and permits air to exhaust rapidly from the top of the trip-off valve *B* which had cut off steam from the jets. The steam portion of this trip-off valve can now open and allow the jets to act. Air from the timing reservoir *F* also exhausts by way of the relay valve *A*, but at a slow rate because it is forced to flow through a small orifice in the combined check valve and exhaust choke *J*. It follows that the pressure on the second air trip valve *C* will hold the valve open for a certain length of time and permit steam to flow both to the chimney blower and to the overfire air jets. When the pressure of the air in the timing reservoir has dropped to about 5 lb. per sq. in., this last-mentioned trip valve closes and all flow of steam stops.

A steam-operated trip valve *G* in the steam line leading to the blower, is controlled by the pressure in the steam chest. This valve cuts out automatic operation of the chimney blower whenever the steam chest pressure produces a draught about equal to that of the blower, that is, when it reaches a pressure of about 50 lb. per sq. in. This is a useful expedient: it saves steam and still retains full protection against flames and gases coming out from between the doors while the jets are on.

When the locomotive is in the engine shed and the chimney blower is connected to the steam supply line, the jets can be turned on manually provided the fire doors are closed, and the two-ball check valves prevent back-flow of steam to the turret.

The globe valve *K*—an optional feature—is to permit manual operation of both chimney blower and overfire air jets when desired, with the limitations (1) that the air jets can only be on when the fire doors are closed, and (2) that the chimney blower can only be turned on when the steam chest pressure is below 50 lb. per sq. in. The trip valves are merely the components of the steam portion of the standard compressor governor, with some slight modifications.

A similar automatic control has been designed for locomotives with mechanical stokers, and it is hoped to publish details shortly.

Air Supply to Coal-Fired Locomotives

Mr. Ralph A. Sherman, Supervisor, Fuels Division, Battelle Memorial Institute, presented a paper on "The Supply of Air to Coal-Fired Steam Locomotives," describing part of a research programme for Bituminous Coal Research Inc. This study included methods for the evaluation of exhaust arrangements, the factors affecting the performance of front-ends, the relation of front-end performance to fuel/air ratio, the relation of performance of front-end to loss of heat in cinders, the effect of back pressure on power output, the front-end efficiency, and possibilities of improvement in the design and performance of locomotive air-supply systems.

This analysis of the problem of the supply of air to coal-fired locomotives by means of the "front-end" system of exhausting the steam from the cylinders into the chimney through a fixed blast-pipe orifice shows that:—

(1) The design of the front-end definitely establishes, at all rates, the efficiency of combustion of the coal, as measured by the excess of air, and the efficiency of the cylinders, except for some possible modification, by the driver, of the position of the regulator and point of cut-off.

(2) The front-end does not increase the rate of supply of air proportionately to the rate of output of the locomotive, but leads

to a decreasing excess, or even a deficiency, of air at high rates.

(3) The loss of heat in cinders carried out of the combustion chamber at high rates is not necessarily the result of the deficiency of air supply by the front-end.

(4) The high back-pressures on the cylinders at high rates lead to large losses in power output.

(5) One of the principal reasons why high back-pressures are required is the high resistance offered to gas flow by the smokebox baffle plate and by the tubes.

(6) Most attempts at manually or automatically controlled front-ends have been based on the assumption that the draught is too intense at high rates of output, and too low at low rates—whereas the reverse is true.

A programme of research to improve the performance of the coal-fired steam locomotive should include:—

(1) Tests on a full-scale locomotive to fix definitely the value of the following: ratio of area of chimney to area of blast pipe orifice; steam pressure; temperature of the gas; and resistance to gas flow. These factors determine the entrainment ratio of a nozzle.

These data could be got, however, from tests on a stationary engine using throttled, desuperheated steam. It is particularly important to measure accurately the weight of the gases moved. This amount preferably is obtained by moving the gases with a fan and measuring with a nozzle or a Pitot tube. Then, if the steam consumption is known, the proper size of blast-pipe orifice for a given locomotive could be determined by calculation instead of empirically.

(2) A review of the design of front-ends, and experimental research to develop a design with the minimum resistance to the flow of gas consistent with proper self-cleaning characteristics.

(3) A review of the problem of heat-transfer in the boiler tubes to fix the area and length of best overall efficiency.

(4) A thorough programme of experimental research to determine the efficiency of overfire air in the elimination of smoke, the reduction of losses occurring in gaseous combustible matter, and of losses in cinders.

Mr. H. B. Lammers, Director of Engineering, Coal Producers' Committee for Smoke Abatement, Cincinnati, Ohio, spoke on "The Effect of Smoke Abatement Surveys Conducted in Various Cities." The organisation with which he is associated is connected with several large coal-producing districts and five railways which serve them. He made the following points:—

(1) The Committee avoids cities where politicians are using smoke abatement as a means to some other end; the bodies represented on the Committee wish to retain their markets, and to do so, every assistance must be given to solving the problem of smoke and atmospheric pollution.

(2) There is no easy road to smoke abatement—it demands hard work in the face of apathy and demands engineering knowledge.

(3) The Committee explains to city officials how certain coals, over a period of years, have found their markets in particular cities, and tells them that, in the main, their smoke problem can be solved without disturbing these markets and irritating the population.

(4) The Committee refused to operate in one large city, though pressed by the city officials to do so, because these officials would not give an assurance that after the Committee's recommendations were pre-

sented, a smoke ordinance would be enacted.

The city officials said they believed they could use the Committee's survey to cajole owners of various business and industrial establishments to follow the Committee's recommendations. The Committee knew that smoke abatement could not be achieved in this way. A workable ordinance, with penalties for infringement and with staff to enforce it, was the final answer.

Smoke must be abated; and it remained for those most concerned to abate it.

Selection of Level Crossings for Elimination

The methodical selection of level crossings that should be given priority in elimination is being studied in America, a matter becoming more urgent every year because the increase in deaths and injuries is already 6 per cent. per annum. The problem of delay to vehicles also is becoming increasingly acute. Accordingly, the American Road Builders' Association recently considered a report by its Committee on Railroad-Highway Grade Separation upon the subject. This report is based on formulae taking into consideration the average number, length, and speed of passenger and freight trains—and also shunting movements where necessary—together with the numbers of road vehicles of various descriptions passing a particular crossing in a 24-hr. period. Additionally, the length of the necessary warning period and time required for a road vehicle to regain normal speed are considered.

Where T = the number of trains a day; Mt = the time in minutes that a train occupies the crossing; W = the warning period; V = the number of road vehicles passing daily; and A = the time in minutes required for such vehicles to regain normal speed; formula (i), assessing the number of vehicles stopped =

$$\frac{(Mt + W + \frac{A}{2}) T}{60 \times 24} \times V.$$

The average time lost per vehicle stopped is one-half the total time consumed by the passing of one train, including time which has been lost due to vehicle acceleration,

$$\text{or—formula (ii)—} \frac{Mt + W + \frac{A}{2}}{2}.$$

The delay due to trains passing, as expressed in formula (iii) is, therefore—

$$\frac{(Mt + W + \frac{A}{2}) TV}{1,440} \times \frac{Mt + W + \frac{A}{2}}{2}.$$

As the component $(Mt + W + \frac{A}{2})$ is common to both (i) and (ii), it may be termed M . We then get $\frac{M^2 TV}{2,880}$ as the

delay due to passing trains.

Statutory safety stops of buses and vehicles carrying petrol or explosives enforced in the U.S.A. are also considered, but do not concern most other countries. In the States the warning period for steam trains is assumed to be 30 sec., and that for electric trains 20 sec., according to our American contemporary *Engineering News-Record*. Loss due to acceleration (A) is also assumed to be 20 sec.

The Assam "Hill Section," Bengal Assam Railway

Some notes on this line, with particular reference to its operation during the war



Down hill section mail headed by a "MacArthur" locomotive is flagged after coming to a stand at catch siding points, Khauladisa, on the 1 in 37 grade

ONE of the interesting mountain railways for which India is famous is the "Hill Section" of the former Assam Bengal Railway, now part of the metre-gauge section of the Bengal Assam system. Forming a link in the main line from Chittagong and Chandpur to Assam, it begins at Badarpur and extends 115 miles to Lumding junction, where it meets the line from Calcutta via Pandu to Upper Assam.

As the accompanying gradient profile shows, it has ruling grades of 1 in 37 against northbound and 1 in 60 against southbound trains, and includes 37 tunnels. Traversing mountainous country covered with thick jungle and intersected by torrents and rivers, the line requires an abnormally high degree of engineering maintenance. In spite of this, the very heavy monsoon rainfall causes serious hillside slips, and malaria is rife. Big game adds further terrors and train collisions with elephants are not unknown.

Military Requirements

This section of line came into particular prominence when, in 1942, the North East Frontier became a war front after the invasion of Burma by the Japanese, and its capacity had to be increased materially to meet military requirements as an important line of communications. Previously, 7- to 9-mile block sections limited the capacity of the hill section to 10 trains each way daily, worked in the main by five 2-6-2 + 2-6-2 Beyer-Garratt locomotives, built in 1927, and by old 4-8-0 "K" class engines, of capacities of 300 and 220 tons on 1 in 60 and easier grades.

By the autumn of 1944, however, 11 additional crossing stations had been opened, and 12 heavy Garratts had been added to the locomotive stud. The daily capacity of the line had been increased not only to 14 through trains and four Engineering Department material trains, but also by 60 per cent., measured by the number of loads moved. The new Garratts have a tractive effort of nearly 42,000 lb. and a haulage capacity of 435 tons on the unbanked sections of the line;

they were the most powerful metre-gauge engines in India in 1944, and on test successfully handled 500-ton trains. In that year the section was relaid with heavier rails to carry the engines; the work—much of it during the monsoon—was carried out mainly by three Railway Construction Companies of the Indian Engineers in conjunction with the railway engineering staff.

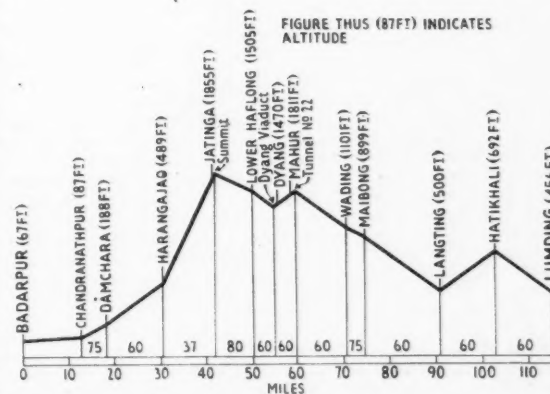
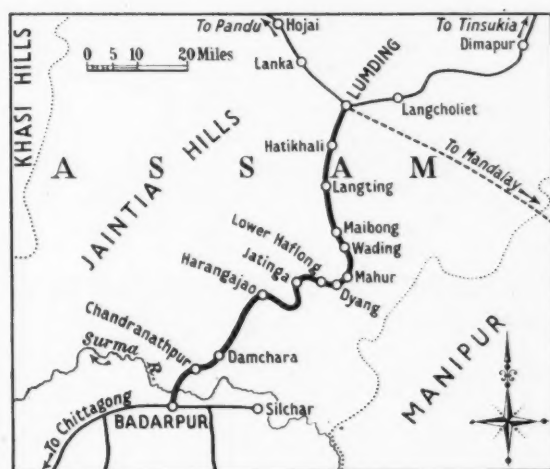
With the exception of the few that were 40 per cent. and more under load, all trains were banked up the 11 miles of 1 in 37 from Harangajao to the 1,855-ft. summit at Jatinga by 2-6-2 "C" class tank engines, five of which were stationed at Harangajao for this duty. Descending passenger trains also were assisted in braking by these banking engines. Down-going goods trains were not necessarily so assisted, as their hand-brakes were pinned down, but in practice, drivers demanded such assistance whenever their trains included a high proportion of American-built W.D. vehicles, as their hand-brakes were not always reliable. The return working of

bankers with descending trains had also the obvious advantage of economising in line occupation. No banking was necessary on the 1 in 60 grades.

Regulations allow a maximum of 25 per cent. of the vehicles on a train to be "piped," provided that the remaining 75 per cent. are braked, fully automatically, and that the piped vehicles are evenly distributed throughout the train—one in every four. Up to three or "4" unfitted vehicles, however, may be attached in rear of the train brake van, if they have an additional controlling brake van. All trains are examined at Badarpur on a pit examination line, fitted with lighting and vacuum testing plant, before being allowed to proceed over the hill section.

"Protection Wagons"

In 1944, five "MacArthur" 2-8-2 locomotives arrived to work as bankers on the 1 in 37 grades. They had modified pony trucks to suit the sharp curvature on the hill section. Having proved successful in working through mixed and goods trains up to 280 tons in weight, they subsequently were used mainly for such services. Petrol trains of 23 tank wagons, necessary to supplement the oil pipe lines, had to be split into three parts over the hill section, as each tanker had to be preceded by four and followed by two "protection wagons," which left tonnage room for only 8 or 9 tankers.



Sketch map and gradient profile of the "Hill Section" of the Bengal Assam Railway

L.M.S.R. New Insulated Containers

Experimental type for low storage temperatures

TWO new highly insulated containers of an experimental type (coded "AF") built recently in the Earlestown Works of the L.M.S.R., have been put into trial service for the carriage of commodities requiring specially low temperatures during transport, with minimum variation of temperature. It is expected that they will be of special value in the transport of such materials as frozen pancreas glands (for the manufacture of insulin), "quick frozen" foods, and ice-cream.

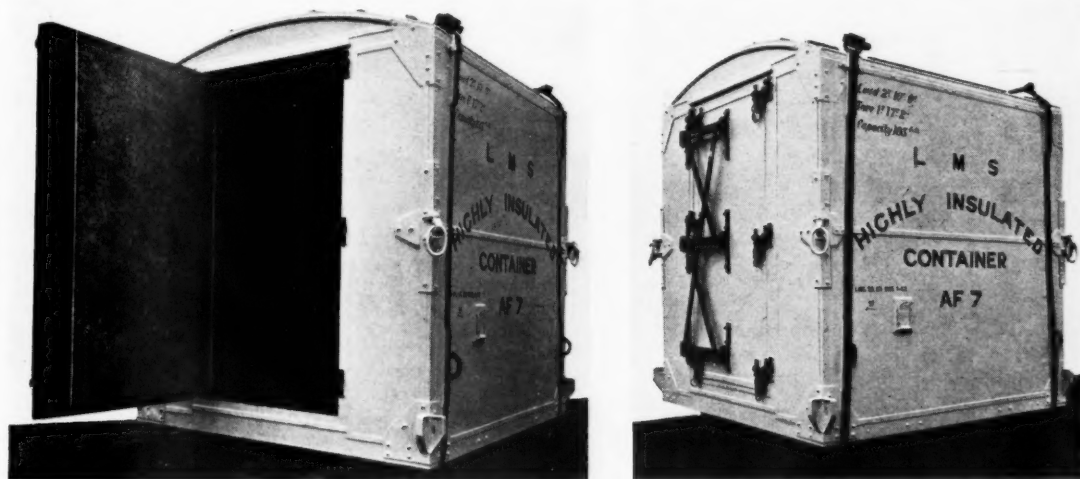
They were designed primarily for ice-cream traffic, which, with the "quick frozen" foods, requires a lower storage

temperatures. So far, the expected performance has been realised and the rate of heat leak is approximately 10 B.t.u. an hour per degree F. difference in temperature between the interior and the exterior. This is equivalent to a rise in temperature of the order of 60° F. a day for a full load without extra refrigerant and with an outside temperature of 60° F. One test consisted of recording the variation of temperature of the air inside an empty container during 24 hours when the ambient temperature varied over 33° F. In spite of the added adverse feature of bright sunshine during the day, the variation recorded did not exceed 3° F.

birch or sycamore instead of the more common hardwoods to obviate any tendency for the natural odour from such woods to contaminate the loads.

The timber framing is designed on the principle of separate frames for the inside and outside panels with no ironwork penetrating the total wall thickness. The main insulation is accommodated between the interior and exterior panelling in the spaces between framing members; in addition to this, the framing members for the inside panelling are insulated from those for the outside panelling where they cross.

The door, designed to reduce heat leak to a minimum, is of full thickness and supported at its vertical centre line by the three main hinges. It is sealed when closed by six clamps which give approximately uniform pressure all round on a



Two views of the new L.M.S.R. highly insulated container

temperature than has been needed for ordinary frozen traffic, normally not below 15° F. The new containers have been designed to maintain temperatures as low as 0° F. or less with, at most, only a few degrees rise in temperature of the load during transit.

Dimensions and also thickness of insulation are based on experience with highly-insulated containers originally known as "E" type; compared with them the capacity has been increased as far as possible, and the insulation thickness increased from 6 in. to 9 in. The insulating material is of "expanded rubber" of good thermal properties and lightness.

Tests have been made and will be con-

tinued. From these results it is expected that in all the normal transits less refrigerant material will be needed with the loads, and that when this may be necessary the quantity will be small compared with that required in any other vehicles at present in use.

Construction and Dimensions

The construction is timber, with exterior and interior resin-bonded multiply panels. The inside panels are faced with galvanised steel sheet; all joints are soldered to present a continuous flush surface over the whole of the interior.

In order to prevent damage to the floor surface there are timber gratings in

rubber gasket of generous dimensions. Although refrigerant is not expected to be necessary as a regular practice, six hooks are provided in the container ceiling to support net bags for dry ice in case this is required for long journeys or in particularly difficult conditions of temperature.

Each container, which will carry a load of 2 tons 10 cwt., has the following inside dimensions:—

Length	...	...	...	5 ft. 10½ in.
Width	...	...	...	5 ft. 4½ in.
Height at centre	...	...	...	6 ft. 2½ in.
Height at sides	...	...	...	5 ft. 9½ in.
Capacity	...	...	...	193 cu. ft.

The tare weight is 1 ton 17 cwt. 2 qr.

G.W.R. TIMETABLE MAPS.—For the first time since 1939 a general map of the G.W.R. system, together with five large-scale sectional maps of London and the suburbs, South Wales, Bristol, and Birmingham, are included in the winter timetable. The new maps are printed in clear, bold type, making for ease of reading.

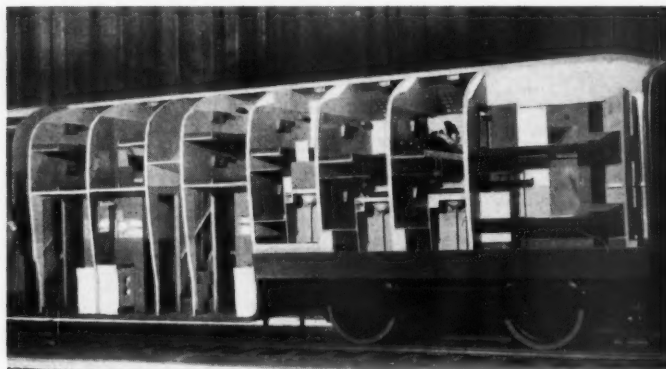
INSTITUTE OF TRANSPORT EXAMINATIONS: TUITION BY CORRESPONDENCE.—During the war, experience was gained of the organisation, through the Institute of Transport, of Services correspondence courses, and, with the approval of the Council of the Institute, the Transport Tutorial Committee has been formed, as an independent

body, with a view to developing that experience to cater for students such as those whose preparations for the examinations of the Institute are handicapped by difficulty in obtaining textbooks and impracticability of attending evening or other classes of instruction. The committee has arranged to provide instruction by correspondence, at first to cover the graduateship examination syllabus, although it is hoped later to extend the scope of the plan to cover the associate membership examination. It is now possible for duly-accepted correspondence students to be supplied with a series of lessons, based on the requirements of the examination, in each of the subjects in

the syllabus. All correspondence should be addressed to the Honorary Secretary, Transport Tutorial Committee, 15, Savoy Street, Strand, London, W.C.2, and personal particulars, business occupation, reasons for inability to attend locally-organised classes, and date of intended examination sitting should be submitted in the first instance. The committee consists of Messrs. C. F. King, A.C.I.S., M.Inst.T. (Chairman); R. Bell, C.B.E., M.Inst.T.; J. M. Leighton-Bailey, B.Sc.(Econ.), A.M.Inst.T.; R. R. J. Plummer, A.M.Inst.T.; C. F. Klapper, A.M.Inst.T.; H. A. Curnow, B.Sc.(Econ.), A.Inst.T.; L. D. Kitchin, A.M.Inst.T.; and C. A. Dove, M.B.E., M.Inst.T.

Design for New-Type Sleeping Car

A model for a vehicle designed for partial double-deck construction shown at the "Britain Can Make It" Exhibition



AMONG the exhibits at the "Britain Can Make It" Exhibition at the Victoria & Albert Museum is a model based on a design by Mr. Misha Black, O.B.E., F.S.I.A., and Mr. W. G. V. Vaughan, O.B.E., M.S.M.A., of Design Research Unit Limited (associate designer: Mr. G. E. Williams, M.S.I.A., also of Design Research Unit Limited) for a third class sleeping car of a new type. The model was constructed by Bassett-Lowke Limited, Northampton, on a scale of 2 in. to 1 ft. The design provides for twenty private compartments, fourteen two-berth and six

of the coach, but that the additional head room thus made available still would be insufficient to provide for normal two-deck construction.

In the proposed design, however, the effect of a double-deck has been secured by providing a longitudinally "stepped" floor to the upper deck, so that on one side of the vehicle headroom is provided over bunks on the lower deck, and on the other side under bunks on the upper deck.

The design provides for a coach 66 ft. long over buffers. In the double-deck sec-

the lower deck, and the dynamo at one end of the coach outside the bogey.

Water could be carried in tanks mounted above the false ceilings over the stairs leading from the corridor to the lower deck, and over the vestibules.

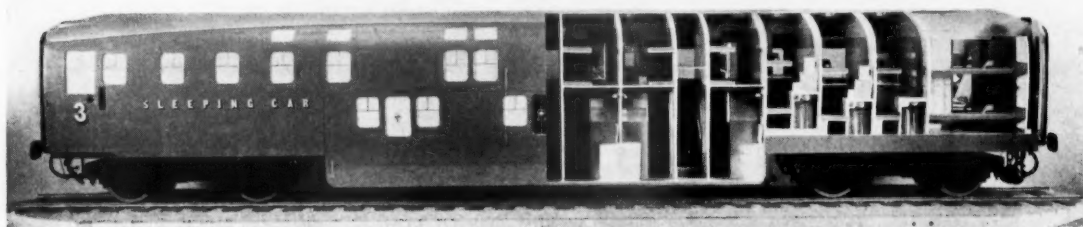
Air scoops would be provided on either side of the dropped portion of roof at each end of the coach. The air would be filtered, and that from one side passed through a simple steam-heated chamber and then piped to each compartment, where, by means of simple controls, the passengers could vary the heat according to their requirements. Air from the other scoop would be cold, and would be filtered and piped to each cabin.

Safety Hatch

The design provides for an aeroplane-type quick-release safety hatch at the foot of each of the three sets of stairs, so that in the event of an emergency, passengers in the lower deck could get out without having to go up the steps and along the corridor. The escape hatch would be fitted with clear glass, and, if need be, could be released also from the outside.

It is stated to have been found possible, by raising slightly the main side members of the end frame, to carry them straight through the full length of the coach (not shown in the illustrations), so that only two centre members of the frame require to be dropped under the well portion of the vehicle.

Other features of the proposed sleeping car are stated to include individual lights to each berth, as well as general illumination in each compartment; wash-hand basin



Full-length view of the model shown at the "Britain Can Make It" Exhibition

single-berth, and a form of double-deck construction in that portion of the vehicle between the bogies has been adopted. An underframe, the central longitudinal members of which would be of the "well" type, is proposed.

The designers of the coach state that, by dropping part of the underframe in this way, it would be possible to secure a substantial increase in the interior height

tion, the corridor provides headroom of 6 ft. 3 in., and in the lower deck compartments head room would be 6 ft. 2½ in.

As it would not be possible to mount the brake cylinders and vacuum reservoirs in the orthodox position below the main frame, the whole of the brake gear would be taken on the bogey frames. Batteries would be mounted below the three sets of stairs leading down from the corridor to

with hot and cold water in each compartment; three lavatories; ample accommodation for small personal belongings; special hygienic internal finishes to walls, ceilings, and floors; and berths equipped with sponge-rubber mattresses and under-pillows.

The designers acknowledge technical advice received from the L.N.E.R. and the Westinghouse Brake & Signal Co. Ltd.

ELECTRIFICATION SCHEME DELAY TO TRAINS.—Important structural and permanent way alterations for the Liverpool Street—Fenchurch Street—Shenfield electrification scheme of the L.N.E.R. which are being carried out at Stratford have imposed there a severe speed restriction, which involves some delay to rush-hour services. To carry out the required alterations, engineers took possession of No. 2 platform and slewed the up and down through lines to permit trains normally using them to pass through or be dealt with at the new interchange platforms, construction of which is now in the final stages. The

slewing and extensive signalling alterations involved were carried out between 11 p.m. on Saturday, October 5, and 5 p.m. on Sunday, October 6, and on the completion of the work the trains were diverted and No. 2 platform thereupon was put out of use.

"FLYING SQUAD" CLEANERS FOR L.M.S.R.—As an experiment towards greater cleanliness on long-distance trains, the L.M.S.R. has introduced a "flying squad" of women carriage cleaners who travel with 48 main-line expresses each weekday, covering a total of more than 4,500 miles

a day. Each cleaner joins a train, usually at an intermediate station, sweeps and tidies empty compartments, corridors, and toilets, and reports deficiencies or broken fittings. On finishing one train the cleaner alights at an intermediate station and works back to starting-point by another train. Where possible in a day's work, some cleaners cover three different expresses. The stations on which the travelling cleaners are based are: London (Euston); Crewe; Carnforth; Chester; Stoke-on-Trent; Stafford; Nuneaton; Sheffield; Kettering; Derby; Birmingham; and Nottingham.

RAILWAY NEWS SECTION

PERSONAL

The Minister of Supply has appointed Sir Wilfrid Ayre to be the seventh member of the Iron & Steel Board. Sir Wilfrid Ayre has had a long experience in the shipbuilding industry.

Mr. F. H. Pank, who, as recorded in our October 4 issue, has retired from the position of Chief Mechanical Engineer, Central Argentine Railway, joined the company in 1907, as draughtsman in the Rosario workshops. He later was transferred to Rio Cuarto, and returned to Rosario in 1915 as Assistant Locomotive Works Manager. In that year he volun-

We regret to record the death, on October 5, at the age of 63, of Mr. Clement Gillman, C.B.E., who was Chief Engineer, Tanganyika Government Railways, from 1929 to 1938, when he was appointed Water Consultant to the Tanganyika Government, a position he held until 1941.

Mr. P. L. Falconer, Assistant to the Chief Mechanical Engineer, Central Argentine Railway, who, as recorded in our October 4 issue, has been appointed Chief Mechanical Engineer, was born at Kirriemuir, Scotland, in 1893. He received his scholastic education at Queen Mary's Grammar School, Basingstoke, and tech-

Sir Edward Mather-Jackson, Deputy-Chairman of the resident board, and the Managing Directors of the various railways, Messrs. M. F. Ryan (B.A.P.R.), W. A. Pickwood (C.A.R.), H. N. Anderson (B.A.G.S.R. and B.A.W.R.), and J. Wilson (A.N.E.R. and E.R.R.), will act as a consultative committee.

Mr. Robert Flack, LL.M., A.M.Inst.T., Chief Accountant, Central Argentine Railway, who has been appointed Assistant to the General Manager, retaining his position as Chief Accountant, was born in Belfast and educated at the Royal Academical Institute in that city. He subsequently joined the Midland Railway (Northern



Mr. F. H. Pank

Chief Mechanical Engineer, Central Argentine Railway, 1939-46



Mr. P. L. Falconer

Appointed Chief Mechanical Engineer, Central Argentine Railway



Mr. Robert Flack

Chief Accountant, Central Argentine Railway, appointed also Assistant to General Manager

teered for active service, proceeded to England and joined the Royal Garrison Artillery, in which he held the rank of Lieutenant. On his return to Argentina in 1919 he resumed his duties as Assistant Locomotive Works Manager. In 1925 Mr. Pank was promoted Locomotive Works Manager at Perez, and in 1931 became Assistant Chief Mechanical Engineer. He was appointed Chief Mechanical Engineer in 1939. In 1937 he was entrusted with a special mission to Hungary in connection with the purchase of the company's Ganz diesel railcars.

Mr. J. L. Brown, Commercial Superintendent, Traffic Manager's Office, Sudan Railways, has been appointed Assistant Traffic Manager, in succession to Mr. E. C. Chandler, recently appointed Traffic Manager.

The late Lt.-Colonel Sir Murrough Wilson, who was Deputy-Chairman of the London & North Eastern Railway Company, left £22,777.

We regret to record the death on September 27, at the age of 69, of Mr. H. S. Hodges, Contracts Manager of the Motor Department of Thomas Tilling Limited. He entered the service of the company in 1898.

nical training at Hartley University College, Southampton; Battersea Polytechnic; and the locomotive works of the L.S.W.R. at Eastleigh. From 1916-18 Mr. Falconer acquired experience as Relief Running Shed Foreman and draughtsman with the L.S.W.R., and in 1918 he joined Beyer, Peacock & Co. Ltd. as a draughtsman. In the next year he joined the Central Argentine Railway as draughtsman in the Chief Mechanical Engineer's Department. From 1923-25 he was Assistant to the Locomotive Running Superintendent, and in the latter year was appointed Assistant Chief Draughtsman. In 1928 he became Assistant Works Manager at Perez, and in 1941 was appointed Assistant to the Chief Mechanical Engineer.

The boards of the British-Argentine railways have appointed a delegation, to be headed by Sir Montague Eddy (Chairman, British-Argentine Railway Council), to meet the technical advisory sub-committee to be set up by the Argentine Government in accordance with clause B of the railway agreement recently concluded. The delegation will consist, in addition to Sir Montague Eddy, of Lord Forbes and Mr. H. C. Drayton, and will be accompanied by Mr. David Pollock, of the firm of Freshfields, solicitors, in the capacity of adviser, and by an independent chartered accountant.

Counties Committee). He served in the war of 1914-18 with railway troops in France, and, on his return in 1918, was appointed Government Investigator of Railway Accounts. In 1919 he was lent by the Midland Railway to act as Manager & Secretary of a small railway in northern Ireland, and in December of the same year was appointed to the Finance Department, Ministry of Transport, London, as Government Investigator of Railway Accounts. In 1924 Mr. Flack joined Deloitte, Plender, Griffiths & Company, and was engaged mainly on the auditing of accounts of British and foreign railways, including the Central Argentine Railway. He became a Barrister-at-Law at the Inner Temple in 1923, and in 1930 took the degree of Master of Laws of the University of London. In 1931 he joined the Central Argentine Railway as Chief Assistant to the Chief Accountant, and in 1934 became Chief Accountant.

Lt.-Colonel W. F. Spree has been appointed Assistant General Traffic Manager, Associated British & Irish Railways, Incorporated, New York.

We regret to record the death, as the result of an accident on August 19, of Dr. P. Guggisberg, Manager of the Bern-Lötschberg-Simplon Railway.



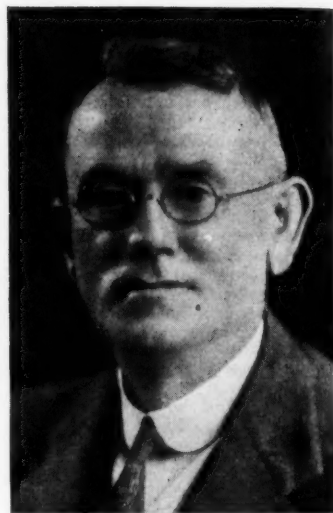
Mr. G. de P. Leeper

Appointed Public Relations Officer, Bombay Group (B.B.C.I.R. and G.I.P.R.) of Indian Railways



Mr. W. Bryan Draper

Appointed Traffic Manager, Guest Keen Baldwins Iron & Steel Co. Ltd., Port Talbot



Mr. W. N. Corry

Appointed Assistant Chief Traffic Manager, New South Wales Government Railways

Mr. George de Preston Leeper, who, as recorded in our September 27 issue, has been appointed Public Relations Officer of the Bombay Group (Bombay, Baroda & Central India and Great Indian Peninsula Railways) of Indian Railways, a new post sanctioned recently by the Railway Department, Government of India, as part of its post-war development plans, was born in 1903 in Leicestershire, and was educated at St. Bees School, Cumberland, Workop College, Nottinghamshire, and Liverpool University. After four years of business life in London he joined the B.B.C.I.R. in 1928 as a Probationary Assistant Traffic Superintendent, and had considerable experience in the Traffic Department, including Head Office, before being appointed Publicity & Advertising Superintendent in 1937. Mr. Leeper introduced several new publicity features. From 1937 to 1941 he edited and published the "B.B. & C.I. Railway Annual" and the *B.B. & C.I. Magazine*. In 1941 the ban on railway officers joining the Army was lifted, and he volunteered for service. He was released from the Army in September, 1944, to accompany a Government-sponsored press deputation on a tour of Indian railways to give it an insight into India's railway war effort, and afterwards was delegated by the Railway Department to assist the Information & Broadcasting Department, Government of India, in organising the railway exhibition held in New Delhi last year. In the same year he was deputed by the Railway Department to report on a group organisation for Indian railway publicity, and his report was accepted.

Mr. Bernard Smith, Acting Accountant, Northern Counties Committee, L.M.S.R., has been appointed Accountant, in place of Mr. G. J. Harris, appointed Assistant to the Chief Accountant, L.M.S.R., Watford, on his return from service with the Control Commission for Germany as Chief Control Officer (Finance & Statistics), Railways Branch.

Mr. W. Bryan Draper, who has been appointed Traffic Manager, Guest Keen Baldwins Iron & Steel Co. Ltd., Port Talbot, was educated at Aldenham School, and joined the L.N.E.R. as a probationary clerk in 1933. He became a traffic ap-

prentice in 1935, and served his training in the Operating and Commercial Departments of the Scottish Area, L.N.E.R.; subsequently he was attached to the office of the Superintendent, Scottish Area, for duties in connection with operating research. Mr. Draper was commissioned in the Royal Engineers (Supplementary Reserve) in August, 1939, and served with the B.E.F. in France, in Iceland and subsequently in home commands, until September, 1943, when he was appointed to the staff of H.Q., 21 Army Group. In September, 1944, he was promoted Lt.-Colonel and appointed to command No. 3 Railway Operating Group, R.E., in Normandy, and subsequently in Belgium and Holland. Mr. Draper is an Officer of the United States Legion of Merit.

We regret to record the death, at the age of 60, of Mr. Sidney Watkinson, who, at the time of his retirement earlier this year on account of heart trouble, was District Chemist for the Southern Area of the L.N.E.R. He commenced his service with the Great Central Railway at Gorton in 1916, and after the amalgamation was transferred to Doncaster.

Mr. W. N. Corry, M.Inst.T., who has been appointed Assistant Chief Traffic Manager, New South Wales Government Railways, entered the service in 1897, and has held appointments as Traffic Clerk, Supervisor of Weighing, Special Officer, General Passenger & Freight Agent, and Outdoor and Indoor Assistant to the Chief Traffic Manager. During 1931 he was selected by the State Government to advise and assist in the preparation of legislation for regulating the operation of railway, tramway and road transport in New South Wales; and in the same year he was appointed Secretary of the State Transport (Co-ordination) Board. When a Transport Commission was constituted in 1932 to regulate land transport in New South Wales, Mr. Corry was appointed a Transport Commissioner, charged with the administration and control of the Commercial Branch of the Department of Transport, a position he retained until the abolition of the Commission, when he rejoined the Department of Railways. During his service Mr. Corry has repre-

sented the Department of Railways on a number of important committees.

L.M.S.R. STAFF CHANGES

Mr. W. E. Allen, Assistant District Controller, Nottingham, to be District Controller, Kirkby.

Mr. R. A. Norrish, Chief Commercial Representative, District Goods Manager's Office, Birmingham, to be Assistant District Goods Manager, Wolverhampton, in place of Mr. E. W. H. Powell, promoted.

Mr. H. E. Hipkiss, Chief Commercial Clerk, District Goods Manager's Office, Birmingham, succeeding Mr. R. A. Norrish as Chief Commercial Representative, District Goods Manager's Office, Birmingham.

Mr. L. C. Prichard to be District Veterinary Surgeon & Horse Superintendent, Manchester, in place of Mr. A. H. Udale, retired.

Mr. R. de Bruyn to be Assistant District Horse Superintendent, Derby.

Mr. J. Gillespie, Clerk, Locomotive Accounts Office, Glasgow, to be Works Accountant (Locomotive Accounts), Glasgow, in place of Mr. W. D. Taylor, retired.

Mr. W. Read, Chief Accounts Clerk, District Goods Manager's Office, Leeds, to be Joint Goods Agent, Huddersfield (L.M.S.R. & L.N.E.R.), in place of Mr. H. Smith, deceased.

Mr. C. F. Addelee, Joint Goods Agent, Batley (L.M.S.R. & L.N.E.R.), to be Joint Goods Agent, Wakefield (L.M.S.R. & L.N.E.R.), in place of Mr. P. Watkinson, promoted.

Mr. F. G. S. Cartwright, Chief Clerk, Leeds (Hunslet Lane), succeeding Mr. C. F. Addelee as Joint Goods Agent, Batley (L.M.S.R. & L.N.E.R.).

Mr. A. C. Riley, Goods Agent, Sowerby Bridge, to be Goods Agent, Keighley.

Mr. A. Shaw, Stationmaster, Barking, also in charge of Upney, to be Stationmaster & Goods Agent, St. Albans City, also in charge of St. Albans Abbey and St. Albans, L.N.E.R.

Mr. P. W. Williams, Stationmaster & Goods Agent, Upminster, also in charge of Upminster Bridge & Emerson Park Halt, succeeding Mr. A. Shaw as Stationmaster, Barking, also in charge of Upney.

Mr. C. Gordon, Chief Passenger Clerk, Dublin, to be Chief Commercial Representative, Irish Traffic Manager's Office, Dublin.

Railway Charges Consultative Committee

Conclusion of cross-examination of railway witnesses

The Railway Charges Consultative Committee continued its inquiry in London on Monday, September 30, into the adjustment of the rates, fares, and charges of the controlled railway companies and joint lines. Sir Bruce Thomas, K.C., is Chairman of the Committee, the other members of which are Mr. H. E. Parkes and Mr. T. E. Argile.

Sir Valentine Holmes, K.C., representing the British Iron & Steel Federation, the National Council of Associated Iron Ore Producers, and the Council of Iron Producers, ended his cross-examination of Mr. F. A. Pope, an L.M.S.R. Vice-President.

Sir Valentine: "Taking my clients, the British Iron & Steel Federation, isn't it a fact that they have quite a considerable amount of traffic to be carried which the railway companies haven't been able to carry in the last few months?"

Mr. Pope: "I know there has been some shortage of wagons."

Sir Valentine reminded Mr. Pope that he had been told recently that the British Iron & Steel Federation was negotiating for 2,000,000 ingots from America in 1947. Of this, 500,000 tons of ingots would be for coastal towns, which would not involve the railways much, but 1,500,000 tons would be for the Midlands.

Mr. Pope replied that the information had been given to him "in confidence" although it was stated that the matter might be raised at the inquiry.

COLLECTION AND DELIVERY

Sir Valentine continued by questioning Mr. Pope on collection and delivery rates.

"You made it quite clear that collection and delivery comes in a somewhat special category because of the importance to the railway companies to do that for themselves instead of allowing other people to come in. In other words, you have got to give competitive rates—competitive with the people who might otherwise come and have to do the collection and delivery themselves."

The railway companies had proposed that increases for collection and delivery rates should be 37 per cent. over pre-war, Sir Valentine continued, as part of the uniform increase of 37 per cent. in all rates.

"I suggest to you that, as regards collection and delivery, the increases of anyone other than the railway companies in collection and delivery must be very considerably more than 37 per cent. over pre-war?"

Mr. Pope: "I have no information about anyone else's cartage."

Sir Valentine suggested that the railway companies might have proposed to raise their charges for collection and delivery beyond 37 per cent., and thereby reduce the net loss on that particular item.

The Chairman of the Committee, Sir Bruce Thomas, K.C., asked what would be the effect of increasing collection and delivery rates to a really material extent.

"I imagine it would be to make it worth while to a lot of traders to cart their own traffic instead of requiring the railway companies to cart the whole of their traffic," Sir Bruce commented. "What effect would that have on the working of the railways?"

Mr. Pope: "In many cases it would bring us to a standstill until we had doubled or trebled our stations' accommodation. It is quite impossible to consider, as a practical short-term policy, somebody else doing the railways' cart-

age. On the L.M.S.R. freight side alone, there are 50,000,000 consignments a year carted. It just doesn't bear thinking about. It could not be done."

The question of cheap fares was raised by Mr. H. V. Rabagliati, K.C., representing the National Coal Board and the Monmouthshire & South Wales Coal Owners' Association.

"I was rather surprised when you said on Friday last that cheap fares had been added by you to road transport competition as a factor which was likely to militate against existing travelling. I suggest to you that if you introduce cheap fares it is primarily for the purpose of raising your revenue."

Mr. Pope: "Financially, yes."

Mr. Rabagliati: "And whether you do it to get new revenue or retain existing traffic, it still has the same effect, namely, to raise your revenue above what it would be if cheap fares had not been instituted?"

Mr. Pope: "Yes."

Mr. Rabagliati: "You were suggesting that cheap fares might reduce your revenue. I can understand it that anybody who travels regularly, but not frequently enough to take a season ticket, would take advantage of cheap fares if he could, and therefore might pay less after that had been instituted. But for every such person there must be one or two others who would travel with the advantage of the cheap fares who hadn't travelled before."

Mr. Pope: "That doesn't follow a bit."

Mr. Rabagliati: "Or somebody who would travel twice at the cheap fare instead of once at the ordinary fare?"

Mr. Pope: "It doesn't follow at all."

Mr. Rabagliati: "One can imagine that where there are cheap fares you will get more passengers than where there are not. Surely your hope is that you will get so many more passengers that your revenue will rise?"

Mr. Pope: "That is the system in normal times. But these are not normal times."

Mr. Rabagliati: "It would be reasonable to anticipate in the autumn months this year that you might raise an additional £1,000,000 through the institution of cheap fares?"

Mr. Pope: "Certainly not."

Mr. Rabagliati: "I was going to suggest that if you carried it on into 1947, it would not be unreasonable to anticipate an increase of £4 millions in revenue."

Mr. Pope: "I wouldn't agree. The point about cheap fares is that it must be connected with the facilities available. I have explained briefly that we are not in a position at the moment, with arrears of maintenance, the reduction in our coaching stock, and the position with regard to engine hours to introduce the facilities which might result in that addition. This cheap-fares policy has got to be dealt with in the most careful manner."

Mr. Rabagliati suggested that in view of increased production generally and the Government's export drive, there would be an additional income to the railways of £8 millions in 1946 and another £8 millions in 1947.

Mr. Pope: "If you mean there is to be an £8 millions increase over the estimated total traffic receipts for 1947, I would say that that is quite impossible. It certainly wouldn't happen in 1946."

Mr. Rabagliati: "I suggest to you that your estimate for 1946 does not take ade-

quate account of the probable increases in public travel, either passenger or goods, and that your estimate for 1947 is even less favourable in that respect, and that it ought to be higher than for 1946."

Mr. Pope: "It is, on public traffic. I can't help what happens as far as Government traffic is concerned."

CARRIAGE OF COAL

Questioned about the estimated carrying of coal in 1947, Mr. Pope said that after discussion with the Ministry of Fuel & Power, they came to the conclusion that the rail board tonnage in 1947 would be 143 millions.

Mr. Rabagliati: "Did you get an estimate of output?"

Mr. Pope: "Yes. You must know it because you represent the National Coal Board. It was 186 million tons."

Mr. Rabagliati: "Have you since heard from the Ministry of Fuel & Power direct or through the Ministry of Transport that the estimate you received has been revised upwards?"

Mr. Pope: "No."

Mr. Rabagliati: "Have you received any communication from the Ministry of Transport in the last day or two?"

Mr. Pope: "There was a private letter to a member of the staff of one of the railways who seems to attach a certain amount of fear that I might disclose, in answer to you or somebody else, the estimated output of 1947."

Mr. Rabagliati: "I am not in a position to give an estimate for 1947—perhaps nobody is—but I understand that there is coming to the railway companies a communication which states that the estimate which was given was lower than has since been shown to be likely on revision of estimates in the Ministry of Fuel & Power for the forthcoming twelve months. More than that I cannot say now."

Mr. Heald interposed, "When can we expect that?"

"I cannot say," replied Mr. Rabagliati. "It depends on the Ministry of Transport."

Mr. Heald commented: "The left hand does not know what the right hand is doing. The first fruits of nationalisation."

Mr. Geoffrey Hutchinson, K.C., appearing for the Chamber of Shipping of the United Kingdom, opened his cross-examination, remarking, "Those for whom I appear are concerned in this inquiry because the Minister of Transport has directed the Committee, in reaching its conclusions, to have regard to the importance of maintaining adequate coastwise shipping services."

COASTWISE SHIPPING

Adding that the war had resulted in a substantial reduction of the tonnage engaged on coastwise shipping, some of which had been destroyed and some diverted for other purposes, Mr. Hutchinson produced a table which gave an account of the net tonnage of British and foreign vessels employed in the coasting trade that arrived and departed with cargo at ports in the United Kingdom during June, 1946, and in the six months ended June, 1946, compared with corresponding periods of 1945, and the monthly average and half-year average of 1938.

The total British tonnage for the monthly average in 1938 was 2,348,391, Mr. Hutchinson said, comparable with 2,001,408 for June, 1946. The total for the first six months of 1946 was 11,180,857, against 13,840,562 in the first half of 1938.

This showed a loss in the monthly average of British shipping in 1938 and in

June, 1946, of 346,883 tons. Mr. Hutchinson added, and a half-yearly reduction between the first halves of 1938 and 1946 of 659,705 tons.

Mr. Pope agreed that the figures showed a substantial reduction of tonnage as the result of the war.

Mr. Hutchinson: "In view of those figures, would you agree that the standard of 1938 is more likely to represent an adequate coastwise shipping service, from the Minister's instructions, than the present level?"

Mr. Pope: "I really can't answer that."

Mr. Hutchinson: "What I am going to suggest is that you have got to consider the matter from the standpoint, not only of retaining in the coastwise shipping service the tonnage which is there at present, but also from the point of view of creating conditions which will attract back tonnage which has been lost in consequence of the war. Can you tell me if that has ever been considered?"

Mr. Pope: "Of course we considered the question of coastwise shipping all the time. After all, we have agreements with the coastwise shipping people."

EXCEPTIONAL RATES

Mr. Hutchinson continued by reminding Mr. Pope that previously in the proceedings he had asked for further information of the proportion of the railway receipts derived from traffic carried at exceptional rates. "This matter had been previously dealt with by the railway companies by taking a representative week," Mr. Hutchinson said. "When they were considered in 1940, the representative week quoted was in March, 1935, for which, in money receipts, 69.21 per cent. of the traffic carried was at exceptional rates. For the week ended April 2, 1939, it had since been disclosed, 73.51 per cent. of the receipts were derived from traffic carried at exceptional rates. The proportion on a quantitative basis—tonnage—was 87.92 per cent."

Mr. Pope: "I would like to make this clear. That is freight traffic, not coal."

Mr. Hutchinson: "That shows that the proportion of your receipts derived from the carriage of traffic at exceptional rates continued to show a rise between 1935 and 1939?"

Mr. Pope: "Yes."

Mr. Hutchinson: "Would it be right to say that that traffic which is carried at the exceptional rate is carried at a narrow margin of profit?"

Mr. Pope: "A narrower margin."

Mr. Hutchinson: "The railway companies would have earned a very substantial margin of profit if that traffic had been carried at standard charges?"

Mr. Pope: "Then they might not have been carried by the railways at all."

Mr. Hutchinson: "In the case of this traffic carried at exceptional rates, I suppose there are some cases where it is carried at a loss?"

Mr. Pope: "I don't think anybody knows the answer to that. These rates have been going on for so long that they are part of the structure of the railway companies' general charges."

Mr. Hutchinson: "Would you say that very many of the rates which are more than 40 per cent. below the standard charges are probably unremunerative to the companies?"

Mr. Pope: "I don't know."

The inquiry adjourned until Tuesday when Mr. Hutchinson continued his cross-examination of Mr. Pope.

Mr. Hutchinson: "When the Committee

adjourned last night, I was drawing attention to the fact that your proposals for increased charges did not bear any very close relationship to the railway companies' increased working costs, whatever the explanation for that may be. Would you agree with me that the shipowners also have experienced increases in their working costs?"—"I should imagine that is quite true."

Mr. Hutchinson: "Do you know that in the case of liners the increase in working costs are estimated by the owners at something over 100 per cent.—I don't know that."

Do you know that shipping freights are still controlled by the Minister of Transport?"—"Yes."

"Has the Minister during the last few months authorised an increase of 75 per cent. in the liners' rates?"—"I don't know."

Mr. Hutchinson then produced a number of tables which showed examples of exceptional railway rates and comparable coasting rates.

Mr. Pope: "We have not checked up on your figures, and I am not suggesting that they are not correct, but there may be mistakes in them. It is extremely difficult to be cross-examined on the comparison set out in the columns of your tables. To examine these rates properly and get the history of them all would take weeks."

Mr. Lionel Heald, K.C., leading counsel for the railways: "We are not in a position to do justice to this matter without a lengthy adjournment."

Mr. Hutchinson: "For the moment I am only concerned with asking Mr. Pope to make a comparison for some of the rates as they appear in the tables."

Sir Bruce Thomas, K.C., Chairman: "I don't think it has been suggested for the moment that your figures are not correct."

Asked by Mr. Hutchinson if he would describe the rates as competitive, Mr. Pope replied, "I don't follow your question of raising the point of competition, I thought you were raising the question of the comparison of rates."

Mr. Pope admitted that out of the 216 rates tabulated by Mr. Hutchinson, there were only 35 cases where the rate for coasting liners was less than the railway exceptional rate.

Mr. Hutchinson suggested that coastwise shipping was slower than the railways and that the owners had to pay marine insurance.

"Would you agree that by reason of those unfavourable factors coastwise shipping, in order to be competitive in the railway rates, requires a differential in favour of the shipping rate?"

Mr. Pope: "No."

Mr. Hutchinson: "The coastwise shipping rate, in order to be competitive, has got to be lower than the comparable railway rate. My witnesses are going to say that the differential should be in the region of about 15 per cent. in favour of coastwise shipping in order to make the rate competitive. Do you agree with that?"—"No."

SHORT-HAUL JOURNEYS

Mr. Pope agreed that some cargoes which travelled by coastwise shipping services were brought to the ports by train and that the railway rate for those short haul journeys was an important factor in the relative rates between coastwise shipping and the railways. But he would not agree that over a number of years the policy of the railways had been against the establishment of exceptional rates for the short hauls to the ports.

When Mr. Hutchinson referred to the position of dock charges, Mr. Pope agreed that, with regard to the basic charges at the railway-owned ports, there was no differential in favour of coastwise shipping.

After Mr. Hutchinson had submitted further documents to Mr. Pope, he agreed that before the war at the non-railway-owned ports, there was a basic differential in favour of coastwise shipping.

Mr. Hutchinson: "I suggest that in the non-railway-owned ports there is, in fact, in certain cases a differential in favour of coastwise cargo that does not exist at the railway ports, and that that is a factor which you should have taken into consideration in determining the amount of your recommended increases, if your intention was to bring the charges at the railway ports into line with the charges at the non-railway ports. The existence of the differentials at the non-railway ports was a factor, I suggest, which you had perhaps overlooked at the time when you decided on an increase of 60 per cent. on your dock charges."

Mr. Pope disagreed.

Mr. Hutchinson submitted that if the existing charges on coastal liners and cargoes remained at the 15 per cent. increase over pre-war, at which they had been since July 1 of this year, the financial result upon the railways' position would be negligible. He suggested that they should remain at 15 per cent., and, in view of the Minister's direction to the Committee to have regard to the importance of maintaining adequate coastwise shipping services, that low differential should be extended to all classes of coastwise shipping.

Mr. Hutchinson again stressed that there should be no further increases in the charges for coastal liners and cargoes, and cross-examination of Mr. Pope was continued by Mr. Roland Adams, representing the Traders' Dock & Harbour Coordinating Committee, who said that his clients desired to see that charges were as low as possible.

"Why should you recommend the application of a new and unfavourable differential in regard to dock charges?" Mr. Adams asked.

Mr. Pope: "If we had even the 1938 level of traffic through the railway-owned docks we should have to put up our percentage increase to 58 to cover expenditure only and to 72 per cent. to cover the 1938 level of net receipts. But we have not got the 1938 level of traffic, and the increase to 60 per cent. will not give us any net revenue."

DOCKS CHARGES

Answering a further question from Mr. Adams, Mr. Pope said that it was not unreasonable, in his view, having regard to the general rise in the level of costs, to suggest that the railway-owned docks' charges should be increased.

Mr. Adams questioned Mr. Pope regarding the effect upon the British ports of the re-opening of Continental harbours.

Mr. Pope agreed that such ports as Bremen, Le Havre, Dunkirk, and Amsterdam, which had been historically in competition with English ports, were now coming back into action, having been "sealed-off" in some cases.

Mr. Adams: "In making your tonnage estimates or money estimates did you consider that element?"—"No, not precisely. From the point of view of the railway-owned docks we have to deal with the total tonnage."

After Mr. Hutchinson's cross-examination, Mr. Pope was asked by the Chair-

man: "Do you think road transport will get into its pre-war stride quicker than the railways will get into theirs?"

Mr. Pope: "Broadly, yes."

Mr. Pope agreed with Mr. Heald, re-examining, that in 1938 the relative contribution of passenger and goods traffic to total receipts was: passengers 46 per cent., goods 54 per cent. In 1947 at the present level of charges the contributions would be: passengers 47½ per cent. and goods 52½ per cent. With the proposed increase in charges for 1947 the percentages would return to their 1938 proportion.

The inquiry then adjourned until Wednesday, when Mr. Dudley Collard, appearing for the Barking Corporation, said that he had three submissions to make. First, a general submission that there should be no further increases of fares at all.

Chairman: "When you say that there should be no further increases of fares at all, is that founded on the assumption that we shall come to the conclusion that there is no deficit to be made good?"

— "Yes; that the railway companies' estimates are unduly pessimistic."

Chairman: "And not on the assumption that, if there is a deficit to be made good, none of the increased burdens should be borne by the passenger fares?"

— "No, sir. My general point is simply that the estimates are pessimistic and that there should be no reasonable apprehension of a deficit at all."

SEASONS AND WORKMEN'S FARES

"My second point concerns season tickets and workmen's fares," Mr. Collard continued. "If, contrary to my first submission, the Committee comes to the conclusion that some increases were necessary, season tickets and workmen's fares should remain at the existing level and not be increased at all. It would cost very little to concede that point to season-ticket holders and workmen's fares."

The difference in the railway companies' estimates between the 25 per cent. increase which existed, and the 37 per cent. increase which the railways recommended, was a mere £584,000 for workmen's tickets and £1,146,000 for season tickets. The reasons in 1940 for making some differential between ordinary fares and season-ticket and workmen's rates still applied today, and the Minister of Transport had preserved the differential when adjusting charges in July. An additional feature today, which did not exist in 1940, was the housing situation. Before the war it could be said to people for whom travelling expenses had a first claim on their wages: "You choose to work this distance from your home. There is accommodation nearer your work." Today everybody was in a more static position than 1940 because of the acute housing shortage, and it was no longer possible to say to the holder of workmen's ticket or a season ticket: "You have brought it on yourself."

The submission he was making, Mr. Collard continued, was to invite the committee to recommend that the fares from Barking Station on the line on which the District Railway runs, and which is governed and administered by the L.M.S.R., should be assimilated to the fares prevailing in other parts of the L.P.T.B. system.

"I fully appreciate that the Committee must be concerned with general principles and that it will only be with some reluctance that you will consider any particular anomalies prevailing in some districts and

deal with them. I know that it would need a strong case to justify your interfering, but I believe that on behalf of the citizens of Barking, I can present a strong case which would justify the committee making a strong recommendation."

"In your terms of reference you are requested to have regard to the equitable distribution of charges. But that is not the case at Barking, where the charges, far from being equitable, are iniquitous. It is no accident that inhabitants of Barking and East London are constantly appearing before this Committee and similar tribunals with objections to the fares they have to pay. They are labouring under a very genuine sense of grievance and injustice."

Mr. Collard continued by referring the Committee to Becontree Housing estate, which came partly within the Barking boundaries. It was the largest housing estate in the world.

"It will be my submission that this, the largest housing estate in the world, has the poorest railway facilities in the world. Well, that may be a little exaggerated, but they are very poor facilities for a housing estate of that size."

Referring to overcrowding and lack of accommodation on the trains in the Barking area, Mr. Collard described it as "an extremely lucrative branch of the L.M.S.R."

Mr. Somerville Hastings, F.R.C.S., M.P. for Barking, giving evidence to the Committee, said, "On the Barking District Line conditions are simply appalling. The overcrowding in the rush hours are such as I have never seen anywhere else. Passengers are pushed together so tightly it is almost impossible to breathe. The carriages are badly ventilated so that they become hot and steamy, and I am quite certain that there is a very serious danger to the health of the people."

Questioned by Mr. Lionel Heald, K.C., for the railway companies, Mr. Hastings said he felt the Barking fares were higher than they should be, and if a certain revenue was to be obtained, it should be got in some other manner. Mr. Heald: "Do you know if longer or more frequent trains can be run?"—"I have discussed it with the Minister of Transport repeatedly and he assured me that it is not possible."

Mr. Heald: "The railway companies are the first to admit the inadequacy of the present services and are the first to desire to improve them."

POSITION AT BARKING

Mr. Hastings: "Yes, but I submit that the very fact of this chronic overcrowding means that the railway company is deriving a very much higher revenue from Barking than anywhere else."

Mr. Heald: "You have not studied overcrowding in other areas?"—"I have never seen such overcrowding as I have experienced up and down to Barking."

Mr. Heald then commented: "We appreciate the undesirability of these anomalies, but if you are going to put some people's fares down you may have to put some people's up. It is a very delicate business."

Councillor B. E. Roycraft, of Barking, told the Committee that conditions were "unhealthy and indecent."

"It is absolutely impossible on many trains to get one more passenger in. I have seen porters putting their shoulders behind men and women to push them into the train."

Mr. Cyril Herbert Walker, President of the Institute of Housing and Director of

Housing of the L.C.C., a witness called by Mr. Moelwyn Hughes, representing the L.C.C., and a large number of Boroughs in the Home Counties, gave evidence of the "hardship" and "heavy burden" of increased fares to the people who live in L.C.C. housing estates. Travelling expenses were one of the "irreducible" items in the family budget, he said, on which people could not economise.

Mr. Hughes: Do you say it is right and proper that the preferential treatment which has already been accorded to workmen's tickets and season tickets should continue?—Yes.

"Do you regard it as a hardship to the mass of people on outside housing estates if the rates which now exist were increased?"—"Yes. There is another angle to that. If the cost of travel goes up there is a difficulty in getting the people to stay on the outside housing estates because they simply couldn't afford it. That would lead to over-crowding again."

LATEST TRAFFIC RECEIPTS

Mr. Heald then announced the latest railway traffic receipts. They were for the first 38 weeks of the year—up to September 28. Passenger train receipts were £117,886,000, merchandise receipts (excluding coal and coke) £75,810,000, coal and coke receipts £35,786,000, giving a total of £229,482,000.

"When we started this inquiry we had only receipts for the first 24 weeks of the year available," Mr. Heald added. "But now we have receipts for 38 weeks and, as I understand it, they are comparable with the figures we have been working on."

The hearing adjourned until Thursday, when the Chairman announced that a representative of the Ministry of Fuel & Power would attend on Monday to give evidence.

Mr. Jacques Abady, K.C., representing the British Coking Industry Association, asked what would be the effect if the Ministry of Fuel & Power reduced its estimates of coal production for 1947.

"Supposing the Ministry of Fuel & Power states that the production for 1947 is a very much lower figure than that on which the railway companies built up their estimate. It is conceivable. And this is fairness to the railway companies; might they not want to revise their recommendations and ask for something more than 37 per cent. increase over pre-war rates?"

Sir Bruce: "That is one possibility. There is another possibility in the other direction."

Mr. James Alfred Cornell, a Fellow of the Royal Statistical Society, an Associate of the Institute of Housing, and Chief Statistician in the Housing & Valuation Department of the L.C.C., gave evidence in support of the statistical tables and graph submitted earlier in the inquiry by Mr. Moelwyn Hughes, K.C., Counsel for the L.C.C.

Mr. Cornell was cross-examined at length by Mr. Lionel Heald, K.C., representing the railway companies, and then Mr. H. V. Rabagliati, K.C., who with Mr. Granville Slack, appears for the National Coal Board, the Mining Association of Great Britain, and the Monmouthshire and South Wales Coal Owners' Association, called his first witness, Mr. John C. Gridley, the Marketing Member of the National Coal Board, who said the Board was opposed to the application for increased railway rates.

"The Board feels one of its primary tasks is to produce coal in this country as cheaply as possible and to make it

available to the consumer as cheaply as possible," he said. "Therefore it would not like the results which might be achieved by any of its efforts to be offset by an increase in the costs of transport."

In reply to the Chairman, who asked whether Mr. Gridley thought coal charges should bear a smaller percentage addition than the charges to passengers, he said: "We do not claim any preference for the coal industry in 1947, but we do wish to preserve the existing differential applying to coal-class traffic in the rates structure."

GENERAL ECONOMIC SITUATION

Mr. Nicholas Kaldor, a reader in economics at London University, a member of the teaching staff of the London School of Economics, said he had been associated with Lord Beveridge in preparing his report on full employment. "I came here as an economist," Mr. Kaldor said. "I realise that estimating railway receipts involves a great deal of experience of railway operations, but it also involves estimates of the general economic situation on which the trend of railway receipts depends. I intend to demonstrate that on any reasonable hypothesis as to the number of employed and production since the war, the railway companies' estimate for goods train traffic for 1947 is wholly inconsistent with the estimates of this traffic for 1946."

Mr. Kaldor said he found five main variations between the estimates for 1946 and 1947—a 53 per cent. reduction in Government ordinary passenger traffic, a 7 per cent. increase in workmen's fares and season tickets, a 13 per cent. reduction in Government traffic of certain classes of merchandise, a 5 per cent. increase in public traffic of the same classes of merchandise, and a 2 per cent. increase in public traffic of other classes.

Mr. Granville Slack: "Do you expect public traffic on the whole to be better in 1947 than in 1946, or worse?"—"I expect substantial increases in public traffic in 1947 as compared with 1946. In my view there was no justification for the railway companies making the percentage increases in traffic of such small order."

"With regard to goods traffic, have you formed any general view of the position?"—"The railway companies appear to have greatly under-estimated the most important consideration which should govern any estimate for the economic trend in 1947, namely, the result which we have every right to expect from the reconversion to peacetime industries."

IMPORTS AND EXPORTS

Referring to imports and exports, Mr. Kaldor said, "I should say that imports in 1947 will approximate, although not quite reach, the level of 1938, but they will in quantity be about 30 per cent. above the level of 1946."

He also forecast a 50 per cent. increase in exports between 1946 and 1947.

The inquiry adjourned until Friday, when Mr. Nicholas Kaldor further disputed the railway companies' estimate for the volume of traffic in 1947. He said that in 1947 there would be an increase in public goods traffic over 1946 of between 16 per cent. and 30 per cent. in the various classes of merchandise, whereas the railways showed 2 per cent. and 5 per cent.

"The railway companies' estimate is based on their information as to the increase in production for the home and export market," Mr. Kaldor said. "I think it is supposed to take into account loss of traffic to road transport in 1947; I have

not seen the railway companies' estimate for increased production stated separately, but I understood Mr. Pope to say, when cross-examined by Sir Valentine Holmes, that their estimate was 5 per cent.

"I would most strongly disagree with the view of the railway companies that production for the home and export market next year will be only 5 per cent. above this year. I should say that this expectation, assuming that the Government's policy of full employment will continue to be carried into effect in 1947, is wholly unjustifiable. If it really did happen that next year we could produce only 5 per cent. more than this year, it would be nothing short of a national calamity."

Mr. Kaldor said: "I would ask you to consider that the level of industrial production in Great Britain in 1947 will be almost 10 per cent. below the level of the first six months of 1945. Would you really consider that it is taking an unduly rosy view of the situation to say that industrial production in this country next year will reach a level which is more than 10 per cent. below the level of production obtained in this country during the war? Surely you could not say this is an unduly rosy estimate. Yet, on the basis of it we get merchandise traffic estimates for 1947 which are vastly different from those of the railway companies."

Later in his evidence, Mr. Kaldor said: "There is every reason to assume that people of this country in 1947 will travel

far more, in all forms of transport, because they will have far more facilities to travel and far more money with which to make use of those facilities. It is much more reasonable to suppose that road transport will appropriate, perhaps, the lion's share of the increases of travel than that they will actually take away some of the existing traffic from the railways."

Cross-examined by Mr. Lionel Heald, K.C., for the railway companies, Mr. Kaldor said he did not agree with the submission put forward by Mr. Moelwyn Hughes, K.C. (representing the L.C.C.) that the railway companies' estimates for passenger traffic receipts were £8 millions to £12 millions too low.

Questioned as to his views on proposed fares increases before his detailed examination of the railway estimates, Mr. Kaldor said: "I formed the view that on the grounds of general economic policy it was undesirable at the present time that railway fares should go up."

"The conclusion I reached from my analysis of the figures of employment and production was that traffic receipts for 1947 will be much higher than the railway companies have estimated," Mr. Kaldor told Mr. Heald later.

The afternoon's proceedings were devoted to detailed cross-examination of Mr. Kaldor on his economic reasonings and their application to his tables and estimates.

The inquiry adjourned until Monday.

Royal Train for South Africa

Two trains of fourteen coaches each are being made up for the forthcoming tour in South Africa of the King and Queen. One of them will be the pilot train, and will precede the Royal Train over all routes. It will consist of existing sleeping, dining, and private coaching stock to accommodate Government and railway officials and press representatives. The Royal Train itself will consist of fourteen coaches, of which eight will be new vehicles and the balance of six vehicles will comprise lounge, kitchen, dining cars, and van drawn from the existing South African luxury "Blue Train" now in service in the Union.

The new coaches for the Royal Train comprise three sleeping cars of the South African luxury "Blue Train" standard, and five coaches to accommodate the King and Queen, the Princesses, Royal Household staff, and South African Government ministers and staff. Two of the coaches are being specially built for Their Majesties, and on completion of the tour will be transferred to the "White Train." The other new coaches are being designed to luxury "Blue Train" standards, and after use by the Royal Party will be added to the "White Train" (which is set aside for the Governor General) or used for normal traffic requirements.

The Royal Train will be provided with staterooms, study, family lounge, and toilet amenities, full air-conditioning, complete inter-communication by automatic telephone, and wireless, and broadcast contact with the outside world. There will be a radio communication system between the Royal Train and pilot train, and the pilot train itself will have a short-wave wireless transmitter with high-speed keying equipment and a short-wave receiver.

All the new coaches required for the Royal tour are being manufactured in this country by the Metropolitan-Cammell Carriage & Wagon Co. Ltd., Birmingham, which is the principal contractor. There

are many sub-contractors, among whom are J. Stone & Co. Ltd., for air conditioning and electrical work; Waring & Gillow Limited, for a part of the interior decoration; Marconi's Wireless Telegraph Co. Ltd., for wireless apparatus and broadcast equipment; the General Electric Co. Ltd., for inter-train V.H.F. wireless communication; and Automatic Telephone & Electric Co. Ltd., for the telephone system. The coaches embody the latest practice in all-steel coach design and will be fitted with the most modern and up-to-date equipment obtainable.

The placing of the order for the new stock with the Metropolitan-Cammell Carriage & Wagon Co. Ltd., was reported in our May 3 issue, and we gave some particulars of the inter-train radio communication equipment in our issue of July 12.

Staff & Labour Matters

Brave Conduct of Railwaymen

The British Empire Medal (Civil Division) has been awarded to Mr. Harold Frederick Chiswell Moore, motor driver (acting checker) (Marlborough), Great Western Railway. During the loading and unloading of ammunition an explosion occurred, and some railway wagons caught fire.

Although not a shunter, Mr. Moore by uncoupling behind a wagon, isolated those which were burning. By that time heavy explosions were occurring. The citation states that "he displayed unselfish devotion to duty at the risk of losing his life, as he was well aware that further explosions might occur at any moment."

Mr. Archibald Charles Pickett, driver (Westbury), and Mr. Sidney Ernest Griggs, fireman (Westbury), Great Western Railway, have received King's Commendations for Brave Conduct for services when a fire occurred in an ammunition train.

New L.N.E.R. Clyde Steamer Launched

Sir Ronald Matthews on individual enterprise as the basis of British leadership

The latest addition to the L.N.E.R. Clyde steamer fleet launched on October 2 from the Pointhouse Shipyard, Glasgow, of A. & J. Inglis Limited, after having been named *Waverley* by Lady Matthews, wife of Sir Ronald Matthews, the Chairman of the L.N.E.R.

The *Waverley* has been designed to carry about 1,350 passengers. She has a length of 235 ft., a breadth of 30 ft., and will be fitted with the latest design of triple-expansion engine, giving her a speed of 17 knots. The accommodation will include comfortable and up-to-date lounges and dining saloon, first and third class bars, and a confectionery shop. She will be fitted throughout with a modern system of electric lighting.

After the launch, Mr. James D. Inglis, proposing success to the *Waverley*, coupled with the name of Lady Matthews, recalled that the vessel was the third of that name to be built by his firm, the first having appeared in 1865 on the Dublin-Silloth route, and the second in 1899. The latter was a Clyde steamer and, surviving the first world war, when she was a minesweeper, eventually went down during the evacuation from Dunkirk. Mr. Inglis concluded by saying that whatever the future might bring forth in the way of air travel, there probably would be many who would wish to take a less hurried survey of the beauties of the Clyde, and no better place for that purpose could be found than the deck of an L.N.E.R. steamer.

SIR RONALD MATTHEWS' SPEECH

Sir Ronald Matthews, Chairman of the L.N.E.R., said in reply and in proposing the toast of the House of Inglis, that he always came to Scotland with that proper sense of inferiority which became an Englishman. He came in a spirit of reasonable humility and willingness to learn, and, indeed, it was an education and an inspiration to come to Clydeside and to associate with those who maintained so sturdily its glorious shipbuilding traditions. Their skill and enterprise were one of the main pillars of our national life, and it gave them all the keenest pleasure to know that they had a multitude of orders on their books, including many from foreign

owners. It would be a bad day for Britain and for Clydeside if ever the private enterprise of the great industry of shipbuilding was allowed to die.

The connection of the firm of Inglis with the old North British Railway went back a long way, for Dr. John Inglis, the father of the present members of the firm, was a director of the old North British for many years. He was very happy to know that Captain Cameron was to be the first Master of the new *Waverley*, and he wished him well in his new command. He thought they could regard the rebirth of the *Waverley* as one more indication of the persistence of our national life and ideals, of our strong desire to make good the ravages of war, and to recover and exceed as early as may be our 1939 standards.

It appeared to some no doubt well-meaning, but not very clear-sighted people, that the problems of many of our basic industries would be solved most readily by nationalisation. They clung to the idea that under the inspiring control of the filing systems of Whitehall, in some mysterious and unexplained way these problems would be simplified and would obligingly work themselves out. They forgot, indeed perhaps they never learnt, that the driving forces of industry were enterprise, leadership, hard work, and the taking of calculated risks. He had the highest regard for the Civil Servant in his own sphere, but he had never associated with him enterprise or leadership. His whole training taught him to calculate risks only to the extent of withdrawing rapidly from the brink of decision, and passing the file to another department.

The greatness of this country had lain in the courage and originality, and in the irrepressible buoyancy of great leaders. It was in no State-controlled forcing houses that we had produced these leaders; our way had been the individual way, the way of men greatly daring and greatly enterprising, shirtsleeved and open-collared, not of men eternally sitting in committee trying to distil the national genius and character into lifeless minutes and memoranda.

It was the individual way that built up the international reputation for craftsman-

ship and fair dealing of the House of Inglis, and he asked them all to drink to the firm's continuing prosperity in the years to come.

International Conference of Tourist Organisations

On October 1 the four main-line railway companies entertained delegates to the International Conference of National Tourist Organisations to lunch at the Dorchester Hotel, London, W.1. Lord Portal, Chairman of the Great Western Railway Company and of the Railway Companies' Association, presided, and was supported by the Chairman and General Managers of the four main-line railways.

Lord Portal, proposing the toast of the guests, said that the conference had been called with a view to easing travel frustrations between the countries represented. The British railways were very proud of the British Travel Association, which was led with great efficiency by Lord Hacking, who had as his right hand man Mr. J. G. Bridges, who was well-known as a driving force. The four main-line railway companies and the London Passenger Transport Board would do everything possible to assist Lord Hacking and all those who were attending the conference.

Mademoiselle Dussauze, Directeur du Cabinet de M. le Commissaire General du Tourisme, France, responded briefly to the toast, and said that she had been called on to do so because of the touristic traditions of her country, France.

Lord Hacking, Vice-President of the Travel Association of Great Britain, and Chairman of the General Committee, proposed the toast of the railway companies of Great Britain, and said that that morning the conference had passed a unanimous resolution to the effect that members should make representations to all governments concerned, with a view to securing the freest possible movement of tourists.

COLONEL GORE BROWNE'S TRIBUTE TO GENERAL MANAGERS

Colonel Eric Gore Browne, Chairman of the Southern Railway Company and Deputy-Chairman of the Railway Companies' Association, who responded to the toast, paid a tribute to Lord Hacking for having interested himself in tourism since 1929. There was a saying that evil communications corrupted good manners. He would paraphrase this by saying that comfortable, speedy, and safe communications promoted good fellowship, and he was sure that the railway companies would play their part in securing this. The four General Managers of the railways were present, and he wished to pay a tribute to them, for to them the credit was due for the effort which had been made during the war. He did not think there would be any doubt as to the ability of the railways to deal with the problems of peace. The service they were giving and were going to give in the post-war years would be very much better than it had been before the war. He was not apprehensive as to what the future might bring for the railway companies, but whatever it was, they would go ahead with the task of improving travel in all its infinite variety.

THOMAS COOK & SON LUNCHEON

On Friday, October 4, Mr. Stanley Adams, Chairman, and the Directors of Thos. Cook & Son Ltd., gave a luncheon to the delegates at Grosvenor House, London, W.1. Mr. Stanley Adams presided, and in welcoming the guests referred to the fact that the commission received by Travel Agencies was still at the rate fixed

At the Launch of the L.N.E.R. Steamer "Waverley"



Sir Ronald Matthews and (holding bouquet) Lady Matthews at the launching ceremony

with the original Thomas Cook, although it was true that as railway fares had increased, so the 5 per cent. allowed the travel agent had become more in volume, although no greater in proportion. He had not consulted his colleagues on the board, especially those who were connected with the railways, and no doubt they would take him to task afterwards, but he wondered whether in all discussions on tourism which had taken place at the conference, the position of the travel agents had received sufficient prominence.

Mr. Mogens-Lichtenberg, delegate for Denmark, responded to the toast, and said that the name of Thos. Cook was known throughout the world. He complimented the organisation on keeping open its representation in European countries throughout the war, even when those countries had been over-run, and so being in a position speedily to revive its services with the advent of more settled times.

Notes and News

Iron & Steel Board.—The offices of the Iron & Steel Board have been established in Bush House, Strand, W.C.2.

L.M.S.R. Steelwork Contract.—In connection with the renewal of engine-shed roofs at Cricklewood (N.W. London), Belle Vue (Manchester), Saltley (Birmingham), and Stourton (Leeds), the L.M.S.R. has placed a steelwork contract with a Henley-in-Arden (Warwickshire) firm.

More First Class Accommodation on G.W.R. Suburban Trains.—On and from October 7, first class accommodation will be provided on weekdays on a number of morning and evening outer suburban business trains in the London area between Paddington, Henley, Newbury, and Didcot.

Institute of Transport Presidential Address.—Mr. R. Stuart Pilcher, C.B.E., F.R.S.E., will deliver his inaugural address as President of the Institute of Transport

at the meeting to be held on October 14 at 5.30 p.m., at the Institution of Electrical Engineers, Savoy Place, London, W.C.2. The subject of the address will be "Road Passenger Transport."

Progress & Materials Superintendent Required by the London Passenger Transport Board.—A Progress & Materials Superintendent, age not to exceed 45 years, is required by the London Passenger Transport Board at Chiswick Works. Among other qualifications candidates must have a sound knowledge of office systems and ability to control both wages and administrative staff. For full particulars of this appointment see Official Notices on page 427.

Public Address System at Marylebone Station, L.N.E.R.—The L.N.E.R. has installed an up-to-date public address system at Marylebone Station, which thus brings the total number of L.N.E.R. stations to be provided with loudspeaker equipment to twenty. Two multi-beam loudspeakers of a new type have been placed in sites designed to give the best possible diffusion of announcements over the circulating area and will be used to guide and control traffic during busy periods.

Silentbloc Limited.—Speaking at the annual general meeting of Silentbloc Limited, the Chairman, Mr. H. Vezey Strong, said that the company's profit for the year of £26,151 compared with £20,648 in the preceding twelve months, in which period, however, special non-recurring provision was made for deferred repairs. Sales necessarily were much reduced by the cessation of Government orders and cancellation of war contracts, and it was to be expected that reductions in expenses could keep pace with the falling turnover. The directors had been more concerned, however, with rebuilding the company's sales promotion and selling organisation, and with expanding the technical and research departments, and already they observed with satisfaction the results beginning to accrue from such expenditure. The

Chairman described the problems of labour and materials as "excessively difficult and baffling," and said they prompted the reflection that the decree requiring every industry to export willy-nilly might well be defeating its purpose, bearing in mind that the manufactured product of one industry was the raw material of another.

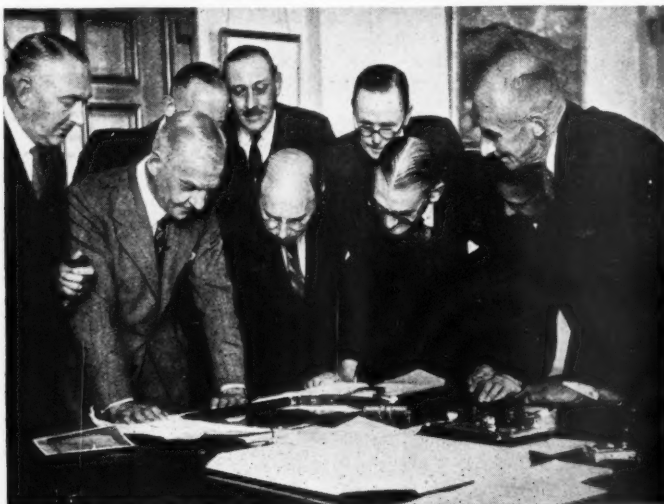
Road Accidents in August, 1946.—The return issued by the Ministry of Transport of the number of persons reported

British and Irish Railway Stocks and Shares

Stocks	Highest 1945	Lowest 1945	Prices	
			Oct. 8, 1946	Rise Fall
G.W.R.				
Cons. Ord. ...	60½	47½	57	+ ½
5% Cons. Pref. ...	124½	104½	112½	+ ½
5% Red. Pref. (1950) ...	107½	101½	104½	—
5% Rt. Charge ...	137½	120	128½	+ 1
5% Cons. Guar. ...	135½	117	125½	+ 1
4% Deb. ...	118	106	115	—
4½% Deb. ...	119½	108	116½	—
4½% Deb. ...	124½	111½	123	—
5% Deb. ...	138	124	133½	—
2½% D.b. ...	83	74½	90½	+ 1
L.M.S.R.				
Ord. ...	33	23½	28½	+ ½
4% Pref. (1923) ...	65	50	55½	+ 1
4% Pref. ...	80½	69½	79½	+ 2
5% Red. Pref. (1955) ...	106½	99½	102½	—
4% Guar. ...	106½	97	103	+ ½
4% Deb. ...	110½	102	109½	+ 1
5% Red. Deb. (1952) ...	110½	103½	107½	—
L.N.E.R.				
5% Pref. Ord. ...	8½	5½	5½	—
Def. Ord. ...	4½	2½	2½	—
4% First Pref. ...	62½	49½	55	+ ½
4% Second Pref. ...	33½	24½	27½	—
5% Red. Pref. (1955) ...	103	96	99	—
4% First Guar. ...	104	95	101	+ ½
4% Second Guar. ...	97	89½	96	+ 1
3% Deb. ...	91½	82½	95	—
4% Deb. ...	109½	101	109	+ 1
5% Red. Deb. (1947) ...	103½	100	99	—
4½% Sinking Fund Red. Deb. ...	106½	103	105½	—
SOUTHERN				
Pref. Ord. ...	79½	63	71½	+ ½
Def. Ord. ...	27	20½	21½	+ 1
5% Pref. ...	124½	104	111	+ 1
5% Red. Pref. (1964) ...	117	107	109½	—
5% Guar. Pref. ...	135½	117	124½	+ 2
5% Red. Guar. Pref. (1957) ...	117	106½	111½	—
4% Deb. ...	117	104½	114	+ ½
5% Deb. ...	137	124	132½	—
4% Red. Deb. (1962- 67) ...	112	104½	109½	—
4% Red. Deb. (1970- 80) ...	113½	104	109½	—
FORTH BRIDGE				
4% Deb. ...	106	103	106	—
4% Guar. ...	106	101	103	—
L.P.T.B.				
4½% "A" ...	125	117	126½	+ 1
5% "A" ...	135	127	135½	—
3% Guar. (1967-72) ...	100	97½	105	—
5% "B" ...	125½	115	121½	—
"C" ...	70	58	59½	—
MERSEY				
Ord. ...	37	31½	30	—
3% Perp. Pref. ...	72½	68	74	—
4% Perp. Deb. ...	104½	104	106	—
7% Perp. Deb. ...	84	78½	85	—
IRELAND* BELFAST & C.D.				
Ord. ...	8½	6	7½	—
G. NORTHERN				
Ord. ...	34	24½	37	+ ½
Pref. ...	52½	42½	58½	+ 1
Guar. ...	80	68	92	—
Deb. ...	97½	87½	105	—
IRISH TRANSPORT				
Common ...	—	—	18/3	—
3% Deb. ...	—	—	103	+ ½

* Latest available quotation

Presentation to Mr. R. G. Davidson



Mr. R. G. Davidson, Chief Accountant, Southern Railway, received a presentation on his recent retirement from Sir Eustace Missenden, General Manager. Left to right: Sir Eustace Missenden, Mr. Davidson, Mr. S. E. Clark, Deputy-Secretary, Mr. A. B. MacLeod, Stores Superintendent, Mr. John Elliot, Deputy General Manager, Mr. O. W. Cromwell, Chief Officer for Labour & Establishment, Mr. R. M. T. Richards, Traffic Manager, Mr. A. Dean, Assistant Chief Civil Engineer, and Mr. C. M. Cork, Chief Electrical Engineer

OFFICIAL NOTICES

"RAILWAY WONDERS OF THE WORLD" (Winchester & Allen). Complete sets wanted. State price asked in first instance.—Box 22, *The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

THE Hunslet Engine Co. Ltd., Leeds, are urgently requiring the services of Senior Draughtsmen. Men with Locomotive experience preferred but not essential provided applicants can satisfy requirements. Prospects of continuous work with good working conditions and canteen facilities.—Apply, 125, Jack Lane, Leeds 10.

1,000 Solid Rolled Steel Wheels (Wagon) available for sale and immediate delivery in the machined state. Complying with British Standard Specification, Class "B", 21-in. Rim, 3-ft. 1-in. Diameter on Tread. Suitable for 53-in. diameter wheel seats after finished boring. Subject to being in stock upon receipt of orders, which should be made to The Blaenavon Company Limited, Blaenavon, Monmouthshire.

LONDON PASSENGER TRANSPORT BOARD.

Applications are invited from persons whose age does not exceed 45 years for the post of Progress and Materials Superintendent at the Board's Chiswick Works. The duties of the post involve responsibility for the administration of the Progress and Material Control Section and require a knowledge of modern Factory Control methods, including Progress Systems and Factory Control stores. A sound knowledge of office systems and ability to control both wages and administrative staff is essential. The commencing salary will be £1,000 p.a. plus war wage (at present £72 16s. 0d. p.a.).

The successful candidate will be required to pass a medical examination and to serve satisfactorily a probationary period. Membership of the Board's superannuation fund is compulsory. Canvassing either directly or indirectly will disqualify.

Applications giving full particulars of education, business and other experience, professional or other qualifications, and present remuneration and age, should be sent not later than October 26, 1946, to the Chief Staff and Welfare Officer (Reference E.R./E.260), London Passenger Transport Board, 55, Broadway, S.W.1.

CHARLES ROBERTS & CO. LTD., Horbury Junction, Nr. Wakefield, have vacancy for SENIOR DRAUGHTSMAN with experience in either Railway Rolling Stock or Structural Steelwork. House available.

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiment. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. Price 2s. Post free 2s. 3d.

THE RAILWAY SYSTEM OF JAMAICA. A general description of the system and its traffic, with an account of economic problems; the motive power used; and some features of operation. By H. R. Fox, B.Sc., M.Inst.C.E., General Manager, Jamaica Government Railway. Reprinted from *The Railway Gazette*, January 5 and 12, 1945. Price 1s. Post free 1s. 2d.

to have died, or to have been injured, as a result of road accidents in Great Britain during the month of August last, shows 446 deaths (compared with 488 in August, 1945), 3,566 seriously injured (compared with 3,452 in August, 1945), and 11,602 slightly injured (compared with 10,818). The total number of deaths, although nine more than in July last, was 42 fewer than in August of last year, and was well below the pre-war average for the month.

Skefko Interim Dividend.—At a meeting of the directors of the Skefko Ball Bearing Co. Ltd. held on October 2, an interim dividend of 3d. per ordinary stock unit of 5s., free of income tax, in respect of the year ending December 31, 1946, was declared payable on November 8, 1946.

Institution of Locomotive Engineers (Presidential Address).—A general meeting of the Institution of Locomotive Engineers will be held on October 16 at 5.30 p.m., in the hall of the Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, when Mr. F. Seymour Whalley, M.C., will deliver his presidential address.

Dorada Railway Co. Ltd.—At the general meeting of the Dorada Railway Co. Ltd. on September 19, Mr. Robert Adeane, O.B.E., who presided in the absence of the Chairman, Mr. J. A. Goudge, C.B.E., stated that the working profit showed a decrease of £6,255 as compared with 1944. The revenue showed a satisfactory increase for the fifth year in succession, but expenses were considerably higher because of increased wages and further social legislation. Petroleum traffic totalled 82,105 tons in comparison with 74,289 tons in 1944. Coffee exports showed an increase of 4.6 per cent. over the 1944 figure. Results for 1946 would depend on any new social legislation, wage and other concessions, and rate increases. New rolling stock had been shipped, and delivery of other new equipment was awaited. A dividend of 4 per cent., tax free, was approved.

Departure of United Kingdom Trade Mission to China.—Two Transport Command, R.A.F., aircraft, one equipped as a "flying office" and the other as a repair shop, left Northolt recently carrying the United Kingdom Trade Mission on its journey to China. The mission, to which reference was made in our August 9 issue, is led by Sir Leslie Boyce; it comprises nine members and a secretariat of three. It will study the possibilities

of increasing trade between Great Britain and China, and will travel many thousands of miles by air inside China. The aircraft have been specially fitted out to make the mission self-sufficient. One carries engineers, spare parts, and repair equipment. The other has an office, complete with desks, typewriters, and filing cabinets.

Institution of Railway Signal Engineers.—The Institution of Railway Signal Engineers is about to open its new session. On October 23, at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2, Mr. Donald L. Champion, F.R.Met.S., will read a paper entitled "Meteorological Factors concerning the Design and Operation of Railway Signalling Apparatus."

Association of Mining, Electrical & Mechanical Engineers.—Notice is given in *The London Gazette* that a petition of the Association of Mining, Electrical & Mechanical Engineers, praying for the grant of a Charter of Incorporation to the Association under the title of "The Institute of Mining Electrical & Mechanical Engineers," has been presented to His Majesty in Council; all petitions for or against such grant should be delivered at the Privy Council Office on or before October 31 next.

Exhibition of Measuring Equipment.—Alfred Herbert Limited, of Coventry, will participate in the Technical Exhibition to be held in the Kelvin Hall, Glasgow, from November 15 to 27, and will exhibit a range of measuring instruments and machines by various makers for which the company is the agent. The equipment will be similar to that shown in an exhibition held at the company's works from September 23 to October 12, and will include projectors and enlargers, surface finish recorders, comparators, and general gauges. We hope to describe a selection of the instruments in a forthcoming issue.

Institution of Electrical Engineers Meeting.—At the opening meeting in Liverpool, on October 7, of the 1946-47 session of the Mersey & North Wales Centre of the Institution of Electrical Engineers, Mr. R. Varley, M.I.E.E., A.I.C.E., General Manager & Engineer, Mersey Railway, was installed as Chairman. Mr. Varley, who delivered an address entitled: "Some Aspects of Railway Electrification in Great Britain," received a technical education at Sheffield University and served an apprenticeship as junior engineer with Sheffield Corporation Elec-

trical Supply Department before joining the Mersey Railway in August, 1922.

Institution of Mechanical Engineers Presidential Address.—Mr. O. V. Bulleid will deliver his presidential address to the Institution of Mechanical Engineers on October 18 at 5.30 p.m.

Cheap First Class Fares on L.N.E.R.—The L.N.E.R. announces that first class cheap tickets at first class single fare for the return journey are being introduced between stations where third class cheap day fares are already in operation, and where first class accommodation is provided.

Cardiff—Southampton Air Service.—Great Western & Southern Air Lines Limited, operating for and on behalf of the British European Airways Corporation, re-opened a Cardiff—Bristol—Southampton air service on October 7. De Havilland six-seat twin-engined aircraft provide a service twice daily (Sundays excepted) in each direction. This route has been planned in conjunction with Channel Islands Airways Limited, and provides an important link for traffic between South Wales and Bristol via Southampton to Jersey and Guernsey by Channel Islands Airways services, which will continue to operate thrice daily throughout the winter. The Channel Islands Airways timetable provides a convenient connection with the G.W.S.A. service. Passengers leaving Cardiff (Pengham Moors Airfield) at 9.35 a.m., or Bristol (Whitchurch Aerodrome) at 10.15 a.m., may, after changing aircraft at Southampton, reach Jersey or Guernsey at 12.30 p.m. In the reverse direction, passengers leaving Jersey or Guernsey at 1.15 p.m. can reach Bristol by 3.10 p.m. and Cardiff by 3.30 p.m.

Forthcoming Meetings

October 16 (*Wed.*).—The Institute of Welding (North London Branch), at the Technical College, Acton, London, W.3. 7.30 p.m. "Development of the Modern Electrode," by Dr. J. H. Paterson, D.Sc., F.R.I.C.

October 17 (*Thu.*).—Diesel Engine Users' Association, at Caxton Hall, Westminster, S.W.1. 2.30 p.m. "Filtration," by Mr. C. G. Vokes, A. M. I. Mech. E., A. F. R. Ae. S., M.I.A.E., M.S.A.E.

October 21 (*Mon.*).—The Permanent Way Institution (London Section), 7 p.m. "Maintenance and Renewal of Permanent Way on the Tube Railways," by Mr. P. Carvey, L.P.T.B.

Railway Stock Market

The reaction in stock markets, which was checked at the end of last week, has been followed by a moderate, although widespread, recovery, particularly in the industrial section which bore the brunt of recent selling. Buying interest revived and prices responded readily, more hopeful views gaining ground partly because of the better Peace Conference news. Moreover, the firm front maintained by British Funds throughout the recent market reaction was regarded as significant.

Leading industrials recovered part of recent declines, Imperial Chemical being 42s. 3d., Turner & Newall 82s. 6d., and Courtaulds 52s. 4½d. Iron and steels firmed up, Guest Keen to 41s. 10½d., United Steel to 25s. 1½d., and Vickers to 25s. 3d., and colliery shares were in renewed demand on estimates of ultimate compensation values, Staveley, Shipley, Bolsover and Carlton Main leading the upward movement. Babcock & Wilcox rallied well to 60s. 3d., North British Locomotive were 25s. 6d., Vulcan Foundry 27s., Beyer Peacock 23s., and G. D. Peters 5s. ordinary 20s. 3d.

Business in home rails remained on a larger scale and has been evenly spread among all classes of securities, although the main emphasis again appeared to be on preference stocks quoted under par. The latter, according to views now gaining ground in the market as to compensation in the event of nationalisation, may have the largest scope for capital appreciation above current levels. Debentures received attention because nationalisation terms would have to give full regard to their high-class investment merits. Ordinary stocks remained more active and were mostly higher on balance, although earlier gains induced a little profit-taking.

Great Western attracted because it has the best dividend record among ordinary stocks of the main-line companies, Southern preferred was favoured on the good yield, and L.N.E.R. first preference tended to reflect the view that this stock appears relatively undervalued. It cannot be assumed that railway nationalisation, if carried out, would be on similar lines to the coal nationalisation; but, nevertheless, the opinion appears to be growing that there is no reason why home railway junior stocks should be valued on a higher yield basis than leading colliery shares. Recent gains in home rails have resulted from a good increase in buying interest; daily markings of business have averaged nearly twice those earlier in the year, the main stimulus having been derived from the assumption that a square deal for Argentine railway stockholders must increase the grounds for expectations of fair treatment for home railway stockholders.

Argentine rails have been less active and inclined to move narrowly, although a good impression was created by particulars of the British delegation to Argentina which has increased hopes that the capital of the new Argentine company will be such as to allow of fair treatment for all classes of stockholders. This induced speculative demand for ordinary stocks, which moved fractionally higher despite a fair amount of profit-taking. On the other hand, preference stocks were less in favour and a certain amount of switching into debentures was reported.

Buenos Ayres Great Southern at 13½ was ½ higher on balance, the 5 per cent. preference at 35 was the same as a week ago, and the 4 per cent. debentures have receded from 81 to 79½. Central Argentine strengthened from 9½ to 10, the 4 per

cent. debentures at 75 rallied after an earlier decline; the 5 per cent. debentures (77) were a point lower on balance. Buenos Ayres Western ordinary was favoured on expectations of improved results for the past financial year, and has been well maintained at 16½, but the 4 per cent. debentures moved fractionally lower at 78½. Buenos Ayres & Pacific at 8½ lost ½, and the debentures were lower, the 5 per cent. (1912) stock losing 1½ at 57½. Argentine North Eastern ordinary was favoured, rising further from 14 to 16½, and the "C" debentures were good at 38½. Central Uruguay stocks continued in favour; the ordinary were 10 and the second debentures 38½. San Paulo ordinary was responsive to estimates that it may prove undervalued at below par, and at 98 regained an earlier decline. Leopoldina railway issues became less active; the preference was 14½ and the 4 per cent. debentures 59.

The upward movement in home rails has further strengthened Great Western from 56 to 56½; the preference stock at 112½ was also ½ higher, the guaranteed stock rose from 123½ to 125 and the 4 per cent. debentures (115) were a point higher. L.M.S.R. came in for some profit-taking and receded from 28½ to 27½; but the 1923 preference rose further from 54½ to 55, the senior preference from 77 to 79, while the guaranteed stock improved from 102½ to 103 and the 4 per cent. debentures to 109.

L.N.E.R. preferred and deferred eased fractionally, and the second preference was ½ down at 27; but the first preference gained ½ at 54, and the second guaranteed a similar amount at 96. Southern preferred remained at 71, the deferred improved ½ at 21½, the 5 per cent. preference to 111 and the 4 per cent. debentures to 114.

Traffic Table and Stock Prices of Overseas and Foreign Railways

Railways	Miles open	Week ended	Traffic for week		No. of Week	Aggregate traffic to date			Shares of Stock	Prices						
			Total this year	Inc. or dec. compared with 1944/5		Totals		Increase or decrease		Highest 1945	Lowest 1945	October 8, 1946				
						1946/7	1945/6									
South & Central America	Antofagasta ...	834	29.9.46	45,160	+	1,277,660	1,168,630	+	109,030	Ord. Stk.	12	8½	10½			
	Arg. N.E. ...	753	28.9.46	ps.332,700	+ ps.21,200	13	ps.4,087,400	+	ps.131,300	Ord. Stk.	10	5½	16½			
	Bolivar ...	174	Sept., 1946	4,314	—	354	39	38,409	+	5,696	6 p.c. Deb.	8½	5½	6½		
	Brazil ...	—	—	—	—	—	—	—	—	Bonds	25	17	29½			
	B.A. Pacific ...	2,771	28.9.46	ps.2,300,000	+ ps.316,000	13	ps.27,588,000	+	ps.25,604,000	Ord. Stk.	7	5	8½			
	B.A.G.S. ...	5,080	28.9.46	ps.3,544,000	+ ps.225,000	13	ps.42,600,000	+	ps.4,038,000	Ord. Stk.	13½	10½	13½			
	B.A. Western ...	1,924	28.9.46	ps.1,029,000	+ ps.272,000	13	ps.15,381,000	+	ps.14,711,000	Ord. Stk.	12½	9½	16			
	Cent. Argentine Do. ...	3,700	28.9.46	ps.3,049,000	- ps.76,850	13	ps.40,413,440	+	ps.39,605,550	Ord. Stk.	9½	7	10			
	Cent. Uruguay ...	970	28.9.46	36,363	+	6,551	13	454,628	+	499,160	Dfd.	5	2½	5		
	Costa Rica ...	262	J. ly, 1946	37,093	+	6,000	4	37,093	+	6,000	Ord. Stk.	7½	4	8½		
	Dorada ...	70	Aug., 1946	35,400	+	6,400	35	256,775	+	243,335	1 Mt. Deb.	103	102	102½		
	Entre Rios ...	808	28.9.46	ps.405,200	+ ps.3,200	13	ps.5,472,700	+	ps.5,447,100	Ord. Stk.	7½	4½	7			
	G.W. of Brazil ...	1,030	28.9.46	32,600	+	9,000	39	1,068,100	+	944,300	Ord. Stk.	30/-	23/6	26/3		
	Inter. Cel. Amer. ...	794	Aug., 1946	\$831,411	+ \$112,000	34	\$7,303,647	+	\$6,251,918	+	\$1,051,731	"				
	La Guaira ...	22½	Sept., 1946	5,949	—	793	39	51,969	—	56,245	5 p.c. Deb.	78	70	58		
	Leopoldina ...	1,918	28.9.46	65,150	—	2,503	39	2,314,566	+	2,012,214	Ord. Stk.	4½	3½	4½		
	Mexican ...	483	31.5.46	ps.1,464,000	+ ps.459,100	22	ps.18,661,800	+	ps.13,414,600	+	ps.5,220,200	Ord. Stk.	½	½	1½	
	Midland Uruguay ...	319	Aug., 1946	20,392	+	3,190	8	39,376	+	36,932	"					
	Nitrate ...	382	30.9.46	3,779	—	1,673	39	154,480	+	137,678	Ord. Sh.	75/6	67/6	71/3		
	N.W. of Uruguay ...	113	Aug., 1946	6,471	+	1,380	8	11,173	—	10	"					
	Paraguay Cent. ...	274	27.9.46	761,154	+ 64,666	13	2,787,229	—	2,800,843	—	1,613,614	Pr.Li.Stk.	79½	77	73½	
Peru Corp. ...	1,059	Sept., 1946	155,779	+ 16,149	13	476,463	+	422,833	+	53,630	Pref.	10½	7½	9½		
Salvador ...	100	30.8.46	c 80,000	- c 11,000	4	c 1,597,450	+	c 1,511,000	+	c 86,450	"	60½	50½	96½		
San Paulo ...	153½									Ord. Stk.	17/-	10/6	18/9			
Talca ...	156	Aug., 1946	3,215	+	840	9	7,050	+	4,200	Ord. Sh.	3	1	2			
United of Havana ...	1,301	29.9.46	50,928	+	6,838	13	703,182	+	592,582	Ord. Stk.	—	—	—			
Uruguay Northern ...	73	Aug., 1946	1,490	+	25	8	2,621	+	3,397	"	—	—	—			
Canada	Canadian National ...	23,535	Aug., 1946	8,772,000	- 770,000	39	63,922,500	—	72,970,500	—	9,048,000	Ord. Stk.	—	—	—	
	Canadian Pacific ...	17,037	30.9.46	2,000,000	+ 35,250	31	53,661,750	—	59,170,000	—	5,508,250	"	24	14½	18½	
Various	Barsi Light† ...	202	Sept., 1946	15,112	—	1,500	26	144,427	+	131,265	+	13,162	Ord. Stk.	131	123	112½xd
	Beira ...	204	July, 1946	91,254	+	13,909	43	767,420	+	770,752	+	3,338	"	—	—	—
	Egyptian Delta ...	607	31.8.46	19,189	+	3,640	22	252,299	+	242,493	+	9,806	Prf. Sh.	10	8½	5
	Manila ...	—	—	—	—	—	—	—	—	—	—	B. Deb.	71	55½	60	
	Mid. of W. Australia ...	277	Jul., 1946	14,495	+	729	4	14,495	—	13,766	+	729	Inc. Deb.	97½	85	75
	Nigeria ...	1,900	July, 1946	369,411	+	332,848	18	1,490,315	+	874,172	+	616,143	"	—	—	—
	Rhodesia ...	2,445	July, 1946	548,983	+	13,242	43	5,149,364	+	5,046,558	+	102,806	"	—	—	—
	South African ...	13,323	7.9.46	1,148,414	+ 107,095	23	25,317,788	+	22,751,021	+	2,566,767	"	—	—	—	
	Victoria ...	4,774	May, 1946	1,351,280	+	4,246	—	—	—	—	—	"	—	—	—	

* Receipts are calculated @ 1s. 6d. to the rupee